

OAKLAND UNIVERSITY WILLIAM BEAUMONT SCHOOL OF MEDICINE

PUBLICATION LIST

April - June 2017

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Abbey AM, Van Laere L, Shah AR and **Hassan TS** (2017). "Recurrent macular holes in the era of small-gauge vitrectomy: A review of incidence, risk factors, and outcomes." *Retina* 37(5): 921-924.

[Full-Text](#)

Department of Ophthalmology

Purpose: To evaluate the preoperative features, intraoperative management, and postoperative outcomes of recurrent macular holes that developed after initial successful repair with small-gauge vitrectomy techniques. Methods: We retrospectively reviewed 392 eyes with idiopathic macular holes successfully treated with small-gauge vitrectomy. Thirteen of these eyes underwent reoperation after macular hole reopening. We assessed patient demographics, visual acuity, postoperative anatomical success, potential precipitating clinical factors of hole reopening, and details of the surgical repairs of these eyes. Results: Macular hole reopening occurred in 13 (3.3%) of 392 eyes in a mean of 28 months (range, 1-120 months) after initial repair. All 13 recurrent holes closed after a second vitrectomy, but 4 (31%) holes reopened again and had vitrectomy. Of these, 2 reopened a third time. Ultimately, 11 (85%) holes were closed at the most recent follow-up. The mean best-corrected visual acuity was 20/81 before initial repair, 20/148 after the first reopening, 20/115 after repair of the first reopening, and 20/55 after repair of >1 reopening. Ten of 13 (77%) patients had, or later developed, macular holes in the other eye during follow-up. Conclusion: Reoperation successfully achieved hole closure and ultimate visual improvement in most eyes with recurrent macular holes. Most patients with recurrent holes previously had, or later developed, full-thickness macular holes in the other eye. © 2017 by Ophthalmic Communications Society. Inc.

Abdulla RK, Aggrawal A, Crile J, **Boura J**, Lester S and **Abbas AE** (2017). "A novel echocardiographic hemodynamic classification of heart failure based on flow state and left atrial pressure." *Journal of the American Society of Echocardiography* 30(6): B71.

[Full-Text](#)

Department of Biomedical Sciences (BHS)

Department of Internal Medicine

Background: Patients with Heart Failure (HF) are divided into 2 main categories; patients with reduced

ejection fraction (HFrEF) and those with preserved ejection fraction (HFpEF). However, the ejection fraction (EF) does not reflect the hemodynamic profiles of patients with HF, specifically those of flow and filling pressure. We sought to compare the echocardiographic hemodynamic profiles of both HF categories with regards to flow state as reflected by stroke volume index (SVI) and left atrial pressure as reflected by (E/E') as well as grade of diastolic dysfunction. Methods: A retrospective analysis was performed of patients admitted with diagnosis of acute heart failure. Both HFrEF and HFpEF groups included and were classified into 4 subgroups according to SVI and E/E'. Group A: SVI > 35 ml/m² & E/E' < 15, Group B: SVI > 35 ml/m² & E/E' > 15, Group C: SVI < 35 ml/m² & E/E' < 15, and Group D: SVI < 35 ml/m² & E/E' > 15. Groups were compared in regards to their diastolic dysfunction and BNP levels. Results: 176 patients were enrolled in the study; of those 123 patients had HFrEF and 53 patients had HFpEF. Patients with HFrEF, compared to those with HFpEF, were more likely to have a SVI < 35 ml/m² (83.5% vs. 47.5%, respectively, p < 0.0001), have elevated E/E' > 15 (76.4% vs. 62.3%, respectively, p = 0.05). Table 1 summarizes the difference between the two groups. In HFrEF patients there was an increase in BNP levels with a decrease in SVI and increase in E/E' within the subgroups with a trend towards statistical significance (p=0.05). Conversely, in patients with HFpEF, there was no evidence of a difference in BNP levels between the different subgroups (p=0.27). There was a more advanced grade of diastolic dysfunction (grade 3) in patients with HFrEF compared to HFpEF (47% vs. 8%, respectively, p < 0.0001). Grade 3 diastolic function was more common in patients with a SVI < 35 ml/m² in both HFrEF and HFpEF patients. Conclusions: Compared to patients with HFpEF, patients with HFrEF are more likely to have advanced hemodynamic profile with low SVI and high E/E' and parallel increase in BNP levels with low SVI and high E/E' and more advanced diastolic dysfunction. Advanced diastolic dysfunction (grade 3) appears to be related to low SVI (<35 ml/m²) in both groups. (Figure Presented).

Ahmed M, Dykowski S, Tooley T, Helland T and Barremkala M (2017). "Influence of learning paradigms on the retention of anatomical knowledge in medical students." *FASEB Journal* 31(Sup 1): 732.739.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

Introduction Practicing clinicians today, especially surgical specialists, feel that medical students' anatomical knowledge is inadequate and does not meet the minimum threshold for safe practice. Culprits for this loss of knowledge are not exactly understood, however, key contributors include inadequacies during initial learning, lack of reinforcement in later phases, and non-adaptive teaching methods for a growingly diverse population of learners. The primary goal of this study is to describe or suggest patterns of learning, learning tools, and teaching methods that promote retention of learned anatomical knowledge in medical students. A secondary goal is to compare and assess perceptions of students on anatomy learning and retention in pre-clerkship years (i.e. years 1 and 2), and during clerkships (i.e. years 3 and 4). Methods An online survey was sent to all medical students (i.e. years 1 to 4) at the Oakland University William Beaumont School of Medicine (OUWB), approximately 450 students. Information collected included demographics, learning style preferences, learning tool preferences, perceived level of anatomical knowledge retained, and opinions on curricular structure. Results Ninety-five students (52.1% male; 73.7% from years 1 and 2) responded to the survey. Fifty-one students (54.8%) stated having no prior experience with anatomy, or having taken an anatomy class, while 42.9% of respondents reported utilizing anatomical principles less than 50% of the time. Seven respondents (10.6%) stated having retained 20% anatomical knowledge learned in first-year medical school, 22 (33.3%) stated 21-39% retention, 29 (43.9%) stated 40-59% retention, and 8 (12.1%) stated greater than 60% retention. Each category of students was asked to provide a rank order of utilized studying resources. Students who reported <60% retention utilized dissection labs and professor written notes as their main resources. Students with >60% reported primarily using also the latter but with less frequency, atlases, and multiple-choice questions. When re-prompted to select resources for optimal retention, in both groups (<60% and >60% retention), there was an increase in frequency of students selecting dissection labs most pronounced in the >60% group. There was also an increase in frequency of students selecting atlases in the 21-39% and >60% groups. Across all groups, professor-written notes were selected less frequently. Conclusion Anatomy education and retention relies on a major visual and kinesthetic (experiential)

component, as seen in the preferences and perceived retention levels of students at OUWB. The use of written notes may be initially important for establishing context, but does not seem to be a significant contributor to long-term retention. As more data is collected, these selections may show concrete trends in the way students are retaining anatomical information.

Altman AD, May T, Lu L, Xu W, McGee J, Lane K, Ghatage P and **Rosen BP** (2017). "Neoadjuvant chemotherapy and cycle number: A national multicentre study." *Gynecologic Oncology* 145(2017): 164.

[Full-Text](#)

Department of Obstetrics and Gynecology

Objective: Based on several studies, 6 cycles of consolidation chemotherapy has become the standard of care for ovarian cancer, yet within the realm of neoadjuvant chemotherapy (NAC), only 3 consolidation cycles are used. This study examines the effects of number of chemotherapy cycles in the NAC and consolidation settings. Method: All patients with stage IIIc and IV high-grade serous carcinoma (HGSC) treated with NAC were identified at 4 major Canadian cancer centers. A retrospective chart review was conducted using the medical charts and registry databases. All patients seen at the cancer centers during the study period were included. Results: A total of 403 NAC patients were identified; 47% had zero residual disease (R0) and 38% had 1-9 mm of residual disease. Chemotherapy cycles were divided into b3 cycles or N4 cycles for NAC and consolidation treatments and analyzed with multivariate analysis. Of 403 patients, 139 (34.5%) received N4 cycles of NAC and had a worse prognosis than b3 cycles (P = 0.011). Of 403 patients, 70 (17.4%) received N4 cycles of consolidation treatment and there was no difference in survival (P= 0.33). Conclusion: This is a study of a homogenous cohort of patients with stage IIIc or IV high-grade serous cancers who received NAC. Patients receiving N4 cycles of NAC had a worse outcome than those receiving b3 cycles likely because of poor prognostic factors or poor response. The number of consolidation cycles did not appear to make a difference in overall survival.

Anees AM, Manuballa V, **Amin M** and **Cappell MS** (2017). "Bladder urothelial carcinoma extending to rectal mucosa and presenting with rectal bleeding." *World Journal of Gastrointestinal Endoscopy* 9(6): 282-295.

[Full-Text](#)

OUWB Medical Student Author

Department of Pathology

Department of Internal Medicine

An 87-year-old-man with prostate-cancer-stage-T1c-Gleason- 6 treated with radiotherapy in 1996, recurrent prostate cancer treated with leuprolide hormonal therapy in 2009, and bladder-urothelial-carcinoma in situ treated with Bacillus-Calmette-Guerin and adriamycin in 2010, presented in 2015 with painless, bright red blood per rectum coating stools daily for 5 mo. Rectal examination revealed bright red blood per rectum; and a hard, fixed, 2.5 cm x 2.5 cm mass at the normal prostate location. The hemoglobin was 7.6 g/dL (iron saturation = 8.4%, indicating iron-deficiency-anemia). Abdominopelvic-CT-angiography revealed focal wall thickening at the bladder neck; a mass containing an air cavity replacing the normal prostate; and adjacent rectal invasion. Colonoscopy demonstrated an ulcerated, oozing, multinodular, friable, 2.5 cm x 2.5 cm mass in anterior rectal wall, at the usual prostate location. Histologic and immunohistochemical analysis of colonoscopic biopsies of the mass revealed poorly-differentiated-carcinoma of urothelial origin. At visceral angiography, the right-superior-rectal-artery was embolized to achieve hemostasis. The patient subsequently developed multiple new metastases and expired 13 mo postembolization. Comprehensive literature review revealed 16 previously reported cases of rectal involvement from bladder urothelial carcinoma, including 11 cases from direct extension and 5 cases from metastases. Patient age averaged 63.7 +/- 9.6 years (all patients male). Rectal involvement was diagnosed on average 13.5 +/- 11.8 mo after initial diagnosis of bladder urothelial carcinoma. Symptoms included constipation/gastrointestinal obstruction-6, weight loss-5, diarrhea-3, anorexia-3, pencil thin stools-3, tenesmus-2, anorectal pain-2, and other-5. Rectal examination in 9 patients revealed annular rectal constriction-6, and rectal mass-3. The current patient had the novel presentation of daily bright red blood per rectum coating the stools simulating hemorrhoidal bleeding; the novel mechanism of direct bladder urothelial carcinoma extension into rectal mucosa via the prostate; and the novel aforementioned colonoscopic findings underlying the clinical presentation.

Ardeshna NI (2017). "Ellen Grass memorial lecture: The utility of neurodiagnostics—it's never too late to make a difference: epilepsy and seizures as a continuum through case studies." Neurodiagnostic Journal 57(2): 119-132.

[Request Form](#)

Department of Neurology

Awosika O, **Totoraitis K**, Eleryan M and Ehrlich A (2017). "Eosinophilic annular erythema: An autoimmune etiology." Journal of the American Academy of Dermatology 76(6): AB122.

[Full-Text](#)

OUIWB Medical Student Author

Bahado-Singh RO, Citil-Dogan A, Wayne S, **Bauer S**, **Ogunyemi D**, Kulkarni SK, Maulik D, **Carpenter CF** and Kulkarni SK (2017). "Zika virus and pregnancy." Journal of Maternal-Fetal & Neonatal Medicine 30(13): 1539.

[Request Form](#)

Department of Obstetrics and Gynecology

Department of Internal Medicine

Bartley JM, **Killinger KA**, **Boura JA**, Gupta P, Gaines N, **Gilleran JP** and **Peters KM** (2017). "The impact of prior back surgery on neuromodulation outcomes: A review of over 500 patients." Neurourology and Urodynamics 36(6): 1535-1542.

[Full-Text](#)

Department of Urology

Department of Biomedical Sciences (BHS)

Aims: To evaluate neuromodulation outcomes in patients with prior back surgery. Methods: Adults in our prospective observational sacral/pudendal neuromodulation study were retrospectively evaluated. History and operative details were reviewed, and outcomes were measured at 3, 6, 12, and 24 months with overactive bladder questionnaire (OAB q) symptom severity (SS)/health related quality of life (HRQOL), interstitial cystitis symptom/problem indices (ICSI – PI), voiding diaries, and global response assessments (GRA). Data were examined with Pearson's χ^2 , Fisher's exact, Wilcoxon rank sum tests, and logistic regression multivariate analysis. Results: Five hundred and sixty patients were evaluated (mean age 58.8 ± 17 years; 83% female; 79% had a sacral lead placed), 109 (19%) had history of back surgery; 66 surgeries were lumbar. Back surgery patients were older (mean 63 ± 15 vs. 58 ± 17 years; $P = 0.003$) and a higher proportion had urge urinary incontinence (UUI) (64% vs. 50% $P = 0.008$). Generator implant rates were similar (94% vs. 91%; $P = 0.34$). OABq-SS and HRQOL and ICSI – PI composite scores did not differ between groups at any time point. On bladder diaries, median incontinence episodes daily at baseline and between stages were worse in the prior back surgery group but all bladder diary parameters improved significantly in both groups with the exception of mean voided volume which only improved significantly in the non-back surgery group. Most patients in both groups reported moderate/marked improvement in overall bladder symptoms. Conclusions: This study suggests that prior back surgery does not appear to impact clinical outcomes; therefore, neuromodulation may be offered in this patient population. © 2016 Wiley Periodicals, Inc.

Beeravolu N, McKee C, Alamri A, Mikhael S, Brown C, **Perez-Cruet M** and Chaudhry GR (2017). "Isolation and characterization of mesenchymal stromal cells from human umbilical cord and fetal placenta." Journal of Visualized Experiments 2017(122): Article No. e55224.

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Department of Neurosurgery

The human umbilical cord (UC) and placenta are non-invasive, primitive and abundant sources of mesenchymal stromal cells (MSCs) that have increasingly gained attention because they do not pose any ethical or moral concerns. Current methods to isolate MSCs from UC yield low amounts of cells with variable proliferation potentials. Since UC is an anatomically-complex organ, differences in MSC properties may be due to the differences in the anatomical regions of their isolation. In this study, we first dissected the cord/placenta samples into three discrete anatomical regions: UC, cord-placenta junction (CPJ), and fetal

placenta (FP). Second, two distinct zones, cord lining (CL) and Wharton's jelly (WJ), were separated. The explant culture technique was then used to isolate cells from the four sources. The time required for the primary culture of cells from the explants varied depending on the source of the tissue. Outgrowth of the cells occurred within 3 - 4 days of the CPJ explants, whereas growth was observed after 7 - 10 days and 11 - 14 days from CL/WJ and FP explants, respectively. The isolated cells were adherent to plastic and displayed fibroblastoid morphology and surface markers, such as CD29, CD44, CD73, CD90, and CD105, similarly to bone marrow (BM)-derived MSCs. However, the colony-forming efficiency of the cells varied, with CPJ-MSCs and WJ-MSCs showing higher efficiency than BM-MSCs. MSCs from all four sources differentiated into adipogenic, chondrogenic, and osteogenic lineages, indicating that they were multipotent. CPJ-MSCs differentiated more efficiently in comparison to other MSC sources. These results suggest that the CPJ is the most potent anatomical region and yields a higher number of cells, with greater proliferation and self-renewal capacities in vitro. In conclusion, the comparative analysis of the MSCs from the four sources indicated that CPJ is a more promising source of MSCs for cell therapy, regenerative medicine, and tissue engineering. © 2017 Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License.

Bhatt K, Borde A, Bien M, Flannigan S, Soward A, Kurz M, Hendry P, Zimny E, Lewandowski C, Velilla MA, Damiron K, Pearson C, Domeier R, Kaushik S, Feldman J, Rosenberg M, Jones J, **Swor R**, Rathlev N and McLean S (2017). "Living in a low socioeconomic status neighborhood increases risk of developing clinically significant PTSD symptoms after motor vehicle collision: Results of a prospective cohort study." *Biological Psychiatry* 81(10): S84.

[Full-Text](#)

Department of Emergency Medicine

Bhatti S, Hendel RC, Lopez-Mattei J, Schwartz RG, **Raff G** and Einstein AJ (2017). "Frequent MUGA testing in a myeloma patient: A case-based ethics discussion." *Journal of Nuclear Cardiology* 24(4): 1350-1354.

[Request Form](#)

Department of Internal Medicine

Borde A, Bien M, Flannigan S, Soward A, Kurz M, Hendry P, Zimny E, Lewandowski C, Velilla MA, Damiron K, Pearson C, Domeier R, Kaushik S, Feldman J, Rosenberg M, Jones J, **Swor R**, Rathlev N, Peak D, **Lee D** and McLean S (2017). "Post traumatic stress disorder outcomes at six months in African Americans Vs. European Americans experiencing motor vehicle collision." *Biological Psychiatry* 81(10): S85.

[Full-Text](#)

Department of Emergency Medicine

Brinks J, Fowler A, **Franklin BA** and Dulai J (2017). "Lifestyle modification in secondary prevention: Beyond pharmacotherapy." *American Journal of Lifestyle Medicine* 11(2): 137-152.

[Full-Text](#)

Department of Internal Medicine

Despite significant advances in medical technology and pharmacology, cardiovascular disease (CVD) remains a major contributor to health care expenses and the leading cause of death in the United States. Patients with established CVD and their health care providers are challenged with achieving cardiovascular risk reduction to decrease the likelihood of recurrent cardiovascular events. This "secondary prevention" can be achieved, in part, through adherence to prescribed pharmacotherapies that favorably modify major coronary risk factors (ie, hypertension, hypercholesterolemia, diabetes, and obesity). However, lifestyle modification can also be helpful in this regard, providing independent and additive benefits to the associated reductions in cardiovascular morbidity and mortality. Accordingly, physicians and other health care providers should routinely counsel their coronary patients to engage in structured exercise and increased lifestyle physical activity, consume a hearthealthy diet, quit smoking and avoid secondhand smoke, and purposefully address psychosocial stressors that may elevate cardiovascular risk. These lifestyle interventions, either as an adjunct to medication therapy or independently in those patients where medications may be poorly tolerated, cost prohibitive, or ineffective, can significantly decrease cardiovascular mortality and the risk of recurrent cardiac events. © 2015 The Author(s).

Burks CE, Jones CW, Braz VA, **Swor RA**, Richmond NL, **Hwang KS**, Hollowell AG, Weaver MA and Platts-Mills TF (2017). "Risk factors for malnutrition among older adults in the emergency department: A multicenter study." Journal of the American Geriatrics Society 65(8): 1741-1747.

[Full-Text](#)

Department of Emergency Medicine

OUIB Medical Student Author

Background: Among older adults, malnutrition is common, often missed by healthcare providers, and influences recovery from illness or injury. Objective: To identify modifiable risk factors associated with malnutrition in older patients. Design: Prospective cross-sectional multicenter study. Setting: 3 EDs in the South, Northeast, and Midwest. Participants: Non-critically ill, English-speaking adults aged ≥ 65 years. Measurements: Random time block sampling was used to enroll patients. The ED interview assessed malnutrition using the Mini Nutritional Assessment Short-Form. Food insecurity and poor oral health were assessed using validated measures. Other risk factors examined included depressive symptoms, limited mobility, lack of transportation, loneliness, and medication side effects, qualified by whether the patient reported the risk factor affected their diet. The population attributable risk proportion (PARP) for malnutrition was estimated for each risk factor. Results: In our sample ($n = 252$), the prevalence of malnutrition was 12%. Patient characteristics associated with malnutrition included not having a college degree, being admitted to the hospital, and residence in an assisted living facility. Of the risk factors examined, the PARPs for malnutrition were highest for poor oral health (54%; 95% CI 16%, 78%), food insecurity (14%; 95% CI 3%, 31%), and lack of transportation affecting diet (12%; 95% CI 3%, 28%). Conclusion: Results of this observational study identify multiple modifiable factors associated with the problem of malnutrition in older adults. © 2017, Copyright the Authors Journal compilation © 2017, The American Geriatrics Society

Cappell MS, Stevens CE and Amin M (2017). "Systematic review of giant gastric lipomas reported since 1980 and report of two new cases in a review of 117110 esophagogastroduodenoscopies." World Journal of Gastroenterology 23(30): 5619-5633.

[Full-Text](#)

Department of Internal Medicine

OUIB Medical Student Author

Department of Pathology

AIM To systematically review the syndrome of giant gastric lipomas, report 2 new illustrative cases. METHODS Literature systematically reviewed using PubMed for publications since 1980 with following medical subject heading/keywords: ("giant lipoma") AND ("gastric") OR [{"lipoma"} and {"gastric"} and {"bleeding"}]. Two authors independently reviewed literature, and decided by consensus which articles to incorporate. Computerized review of pathology/endoscopy records at William Beaumont Hospitals, Royal Oak and Troy, Michigan, January 2005-December 2015, revealed 2 giant gastric lipomas among 117110 consecutive esophagogastroduodenoscopies (EGDs), which were thoroughly reviewed, including re-review of original endoscopic photographs, radiologic images, and pathologic slides. RESULTS Giant gastric lipomas are extremely rare: 32 cases reported since 1980, and 2 diagnosed among 117110 consecutive EGDs. Average patient age = 54.5 ± 17.0 years old (males = 22, females = 10). Maximal lipoma dimension averaged $7.9 \text{ cm} \pm 4.1 \text{ cm}$. Ulcerated mass occurred in 21 patients. Lipoma locations: antrum-17, body-and-antrum-4, antrumintussuscepting- into-small-intestine-3, body-2, fundus-1, and unspecified-5. Intramural locations included submucosal-22, subserosal-2, and unspecified-8. Presentations included: acute upper gastrointestinal (UGI) bleeding-19, abdominal pain-5, nausea/vomiting-5, and asymptomatic-3. Symptoms among patients with UGI bleeding included: weakness/fatigue-6, abdominal pain-4, nausea/vomiting-4, early-satiety-3, dizziness-2, and other-1. Their hemoglobin on admission averaged $7.5 \text{ g/dL} \pm 2.8 \text{ g/dL}$. Patients with GI bleeding had significantly more frequently ulcers than other patients. EGD was extremely helpful diagnostically ($n = 31$ patients), based on characteristic endoscopic findings, including yellowish hue, well-demarcated margins, smooth overlying mucosa, and endoscopic cushion, tenting, or naked-fat signs. However, endoscopic mucosal biopsies were mostly non-diagnostic (11 of 12 non-diagnostic). Twenty (95%)

of 21 abdominal CTs demonstrated characteristic findings of lipomas, including: well-circumscribed, submucosal, and homogeneous mass with attenuation of fat. Endoscopicultrasound showed characteristic findings in 4 (80%) of 5 cases: hyperechoic, well-localized, mass in gastricwall- layer-3. Transabdominal ultrasound and UGI series were generally less helpful. All 32 patients underwent successful therapy without major complications or mortality, including: laparotomy and full-thickness gastric wall resection of tumor using various surgical reconstructions-26; laparotomy-and-enucleation-2; laparoscopic-transgastric-resection-2; endoscopicmucosal- resection-1, and other-1. Two new illustrative patients are reported who presented with severe UGI bleeding from giant, ulcerated, gastric lipomas. CONCLUSION This systematic review may help standardize the endoscopic and radiologic evaluation and therapy of patients with this syndrome. © 2017 The Author(s). Published by Baishideng Publishing Group Inc. All rights reserved.

Chancellor MB (2017). "Urinary biomarkers in women with refractory urgency urinary incontinence randomized to sacral neuromodulation versus OnabotulinumtoxinA compared to controls editorial comment." Journal of Urology 197(6): 1495.

[Full-Text](#)

Department of Urology

Chang BN and **Smith MP** (2017). "A case of unusual drug screening results." Clinical Chemistry 63(5): 958-961.

[Request Form](#)

Department of Pathology

Chehab M, Zintsmaster S, **Jafri SZ**, Richards M and **Roy A** (2017). "CT-guided transosseous soft tissue biopsy: Techniques, outcomes and complications in 50 cases." Cardiovascular and Interventional Radiology 40(9): 1461-1468.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Purpose: To describe the techniques, outcomes and complications of CT-guided transosseous biopsy of soft tissue lesions via multiple different routes. Materials and Methods: Clinical and radiologic data from all consecutive soft tissue biopsies performed via a transosseous approach between April 2009 and July 2015 were retrospectively compiled. Fifty biopsies performed in 50 patients (n = 17 males, n = 33 females) were included. Biopsies were performed using a 13-gauge biopsy needle which was advanced through the selected bone to the lesion margin followed by coaxial placement of either an 18- or 20-gauge biopsy gun. Sampling accuracy was determined from the final pathology report as diagnostic or non-diagnostic. Complications included rates of pneumothorax, pneumomediastinum, hemoptysis, immediate admission, chest tube insertion, surgical consultation, 30-day readmission, fracture, osteomyelitis or tract seeding. Results: Number of diagnostic samples per bone included: sternum (n = 17, 34%), rib (n = 7, 14%), scapula (n = 6, 12%), transverse process (n = 4, 8%), vertebral body (n = 4, 8%), spinous process (n = 1, 2%), ilium (n = 7, 14%), sacrum (n = 4, 8%). Complications included 10 pneumothoraces in 39 cases that crossed the pleura, 8 pneumomediastinum in 17 transsternal cases, one immediate surgical consultation and one 30-day readmission. Conclusion: Transosseous biopsy approach is a technically feasible means of obtaining core needle samples of soft tissue lesions. Level of Evidence: Case series, IV.

Cho I, ó Hartaigh B, Gransar H, Valenti V, Lin FY, Achenbach S, Berman DS, Budoff MJ, Callister TQ, Al-Mallah MH, Cademartiri F, **Chinnaiyan K**, Chow BJW, Dunning AM, DeLago A, Villines TC, Hadamitzky M, Hausleiter J, Leipsic J, Shaw LJ, Kaufmann PA, Cury RC, Feuchtner G, Kim YJ, Maffei E, **Raff G**, Pontone G, Andreini D, Chang HJ and Min JK (2017). "Prognostic implications of coronary artery calcium in the absence of coronary artery luminal narrowing." Atherosclerosis 262(2017): 185-190.

[Full-Text](#)

Department of Internal Medicine

Background and aims coronary artery calcium (CAC) scoring is a predictor of future adverse clinical events, and a surrogate measure of overall coronary artery plaque burden. Coronary computed tomographic angiography (CCTA) is a contrast-enhanced method that allows for visualization of plaque as well as whether that plaque causes luminal narrowing. To date, the prognosis of individuals with CAC but without stenosis

has not been reported. We explored the prevalence of CAC>0 and its prognostic utility for future mortality for patients without luminal narrowing by CCTA. Methods From 17 sites in 9 countries, we identified patients without known coronary artery disease, who underwent CAC scoring and CCTA, and were followed for >3 years. CCTA was graded for % stenosis according to a modified American Heart Association 16-segment model. We calculated hazard ratios (HR) with 95% confidence intervals (95% CI) for incident mortality and compared risk of death for patients as a function of presence or absence of CAC and presence or absence of luminal narrowing by CCTA. Results Among 6656 patients who underwent CCTA and CAC scoring, 399 patients (6.0%) had no coronary luminal narrowing but CAC>0. During a median follow-up of 5.1 years (IQR: 3.9–5.9 years), 456 deaths occurred. Compared to individuals without luminal narrowing or CAC, individuals without luminal narrowing but CAC>0 were older, more likely to be male and had higher rates of diabetes, hypertension, and dyslipidemia. Individuals without luminal narrowing but CAC experienced a 2-fold increased risk of mortality, with increasing risk of mortality with higher CAC score. Following adjustment, incident death persisted (HR, 1.8; 95% CI, 1.1–2.9, p = 0.02) among patients without luminal narrowing but with CAC>0 compared with patients whose CACS = 0. Individuals without luminal narrowing but CAC ≥100 had mortality risks similar to individuals with non-obstructive CAD (0 < stenosis<50%) by CCTA [HR 2.5 (95% CI 1.3–4.9) and 2.2 (95% CI 1.6–3.0), respectively]. Conclusions Patients without luminal narrowing but with CAC experience greater risk of 5-year mortality. Patients with CAC score ≥100 and no coronary luminal narrowing experience death rates similar to those with non-obstructive CAD. © 2016 The Authors

Chopra R, **Vakharia P** and Silverberg J (2017). "A systematic review of inclusion criteria for clinical trials of atopic dermatitis." Journal of Investigative Dermatology 137(Sup 1): S66.

[Full-Text](#)

OUWB Medical Student Author

Chopra R, **Vakharia PP**, Sacotte R, **Patel N**, Immaneni S, White T, Kantor R, Hsu DY and Silverberg JI (2017). "Relationship between EASI and SCORAD severity assessments for atopic dermatitis." Journal of Allergy and Clinical Immunology. ePub Ahead of Print.

[Full-Text](#)

OUWB Medical Student Author

Department of Pediatrics

Chopra R, **Vakharia PP**, Sacotte R, **Patel N**, Immaneni S, White T, Kantor R, Hsu DY and Silverberg JI (2017). "Severity strata for EASI, mEASI, oSCORAD, SCORAD, ADSI and BSA in adolescents and adults with atopic dermatitis." British Journal of Dermatology. ePub Ahead of Print.

[Full-Text](#)

OUWB Medical Student Author

Department of Pediatrics

BACKGROUND: Scoring systems for assessing the signs of atopic dermatitis (AD) are complex and difficult to interpret. Severity strata are helpful to properly interpret these assessments. We sought to confirm previously reported strata for Eczema Area and Severity Index (EASI), Scoring AD (SCORAD) and objective component of SCORAD (oSCORAD) and develop strata for the modified EASI (mEASI), Atopic Dermatitis Severity Index (ADSI) and body surface (BSA) for use in adults with AD. METHODS: Skin-examination was performed in 673 adolescents and adults (age ≥13 years) with diagnosed AD in a dermatology practice setting. Strata were selected using an anchoring approach based on a 4-point Investigator's Global Assessment of severity (clear of active skin lesions, mild, moderate or severe disease). RESULTS: We determined potential severity strata for EASI (0=clear, 0.1-5.9=mild, 6.0-22.9=moderate, 23.0-72=severe; kappa=0.694), mEASI (0-0.9=clear, 1-8.9=mild, 9.0-29.9=moderate, 30.0-90=severe; kappa=0.71), oSCORAD (0-7.9=clear, 8.0-23.9=mild, 24.0-37.9=moderate, 38.0-83=severe; kappa=0.70), SCORAD (0-9.9=clear, 10.0-28.9=mild, 29.0-48.9=moderate, 49.0-103=severe; kappa=0.68), ADSI (0-1.9=clear, 2-5.9=mild, 6.0-8.9=moderate and 9.0-15=severe; kappa=0.55), and BSA (0=clear, 0.1-15.9=mild, 16.0-39.9=moderate, 40.0-100=severe; kappa=0.656). oSCORAD >0 were found in clear skin due to the presence of xerosis, which is scored in oSCORAD. Similarly, SCORAD >0 were found in clear skin due to the scoring of xerosis, pruritus

and sleeplessness. Similarly, mEASI and ADSI scores >0 occurred in patients with clear skin due to scoring of pruritus. CONCLUSIONS: We recommend using these strata for interpretation of their respective measures in clinical trials of AD. There are important differences between the 5 assessments, which profoundly impact the interpretation of their scores. This article is protected by copyright. All rights reserved.

Chorpa R, **Vakharia P**, Sacotte R, **Patel N**, Immaneni S, White T, Kantor R, Hsu D and Silverberg J (2017). "Comparison of EASI and objective-SCORAD assessments in adult atopic dermatitis." Journal of Investigative Dermatology 137(Sup 1): S68.

[Full-Text](#)

OUWB Medical Student Author

Department of Pediatrics

Clark D, Del Gaizo J, Goukasian N, **Hwang K** and Apostolova L (2017). "Mining data from verbal fluency word lists for prediction of amyloid status." Neurology 88(16).

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OUWB Medical Student Author

Objective: Using methods from machine learning, we seek to develop cerebral amyloid. a rapid, inexpensive method for detecting Background: Current clinical trials for Alzheimer disease (AD) rely heavily on amyloid positron emission tomography (PET) scans, but the resources to scan all at-risk individuals do not exist. Design/Methods: Seventy elderly individuals with normal cognition (NC, N=29) or mild cognitive impairment (MCI, N=41) underwent structural MRI scan, amyloid PET scan, and neuropsychological tests, including five verbal fluency tests. We calculated novel scores from transcriptions of the verbal fluency tasks. These scores were used as predictive features in an ensemble classifier to predict amyloid positive status as determined by PET scan. Calculation of the scores and fitting of the classifier followed exactly as described in previous work focusing on conversion from MCI to AD (Clark et al., 2016). For comparison, additional ensembles were generated using fluency raw scores, measures from structural MRI, or combinations of the feature sets. Receiver operating characteristic (ROC) curves were plotted for each ensemble classifier. Results were validated with leave-one-out cross validation and permutation analysis. Results: Novel verbal fluency scores yielded the best classifier, with an AUC of 0.951 ($p < 0.0001$), negative predictive value of 1.0, and positive predictive value of 0.897. A classifier based on verbal fluency raw scores did not perform better than chance (AUC 0.586), and one based on structural MRI measures did not perform significantly better than raw scores alone (AUC 0.761). Addition of structural MRI measures to novel scores did not improve the classification (AUC 0.938). Conclusions: Brief, information-dense, widely accessible cognitive tests, such as verbal fluency tasks, may provide a rich source of data for identifying individuals at lowest risk for cerebral amyloidosis. Those at lowest risk may be safely excluded from expensive screening that would otherwise be necessary for implementation of therapies targeting amyloid.

Cohen-Inbar O, Lee CC, Mousavi SH, Kano H, Mathieu D, Meola A, Nakaji P, Honea N, Johnson M, Abbassy M, Mohammadi AM, Silva D, Yang HC, **Grills I**, Kondziolka D, Barnett GH, Lunsford LD and Sheehan J (2017). "Stereotactic radiosurgery for intracranial hemangiopericytomas: A multicenter study." Journal of Neurosurgery 126(3): 744-754.

[Request Form](#)

Department of Radiation Oncology

OBJECTIVE: Hemangiopericytomas (HPCs) are rare tumors widely recognized for their aggressive clinical behavior, high recurrence rates, and distant and extracranial metastases even after a gross-total resection. The authors report a large multicenter study, through the International Gamma Knife Research Foundation (IGKRF), reviewing management and outcome following stereotactic radiosurgery (SRS) for recurrent or newly discovered HPCs. METHODS: Eight centers participating in the IGKRF participated in this study. A total of 90 patients harboring 133 tumors were identified. Patients were included if they had a histologically diagnosed HPC managed with SRS during the period 1988-2014 and had a minimum of 6 months' clinical and radiological follow-up. A de-identified database was created. The patients' median age was 48.5 years (range 13-80 years). Prior treatments included embolization (n = 8), chemotherapy (n = 2), and fractionated radiotherapy (n = 34). The median tumor volume at the time of SRS was 4.9 cm³ (range 0.2-42.4 cm³). WHO

Grade II (typical) HPCs formed 78.9% of the cohort (n = 71). The median margin and maximum doses delivered were 15 Gy (range 2.8-24 Gy) and 32 Gy (range 8-51 Gy), respectively. The median clinical and radiographic follow-up periods were 59 months (range 6-190 months) and 59 months (range 6-183 months), respectively. Prognostic variables associated with local tumor control and post-SRS survival were evaluated using Cox univariate and multivariate analysis. Actuarial survival after SRS was analyzed using the Kaplan-Meier method. RESU LTS Imaging studies performed at last follow-up demonstrated local tumor control in 55% of tumors and 62.2% of patients. New remote intracranial tumors were found in 27.8% of patients, and 24.4% of patients developed extracranial metastases. Adverse radiation effects were noted in 6.7% of patients. During the study period, 32.2% of the patients (n = 29) died. The actuarial overall survival was 91.5%, 82.1%, 73.9%, 56.7%, and 53.7% at 2, 4, 6, 8, and 10 years, respectively, after initial SRS. Local progression-free survival (PFS) was 81.7%, 66.3%, 54.5%, 37.2%, and 25.5% at 2, 4, 6, 8, and 10 years, respectively, after initial SRS. In our cohort, 32 patients underwent 48 repeat SRS procedures for 76 lesions. Review of these 76 treated tumors showed that 17 presented as an in-field recurrence and 59 were defined as an out-of-field recurrence. Margin dose greater than 16 Gy (p = 0.037) and tumor grade (p = 0.006) were shown to influence PFS. The development of extracranial metastases was shown to influence overall survival (p = 0.029) in terms of PFS; repeat (multiple) SRS showed additional benefit. CONCLUSIONS: SRS provides a reasonable rate of local tumor control and a low risk of adverse effects. It also leads to neurological stability or improvement in the majority of patients. Long-term close clinical and imaging follow-up is necessary due to the high probability of local recurrence and distant metastases. Repeat SRS is often effective for treating new or recurrent HPCs.

Daley E, Koueiter D, Kurdziel MD and **Moore D** (2017). "Characterization of doxycycline-loaded calcium phosphate cement for treatment of aneurysmal bone cysts." *Journal of Orthopaedic Research* 35(Sup 1): No. 2259.

[Full-Text](#)

Department of Orthopedic Surgery

INTRODUCTION: Aneurysmal bone cysts (ABC) are benign but destructive lesions that present most commonly in the first two decades of life. They are a significant source of morbidity for pediatric patients presenting with pain and pathologic fracture, as well as risk of physeal arrest for juxtamedullary lesions. The current treatment option for symptomatic ABC is curettage and bone grafting. However, with this treatment there remains a 19% recurrence rate. The use of percutaneous doxycycline as an anti-tumor agent has been previously described as an alternative treatment with improved recurrence rates, but requires on average 5 procedures for resolution of the lesion [1]. We propose that the use of doxycycline as an adjunct to curettage and calcium phosphate cement may allow for a single stage procedure with reduced recurrence rates. We undertook foundational research to identify the elution profile and biomechanical properties of doxycycline-loaded calcium phosphate cement. METHODS: Calcium phosphate cement was prepared according to the manufacturer's specifications with the addition of doxycycline in four concentrations: 0 mg/mL, 5 mg/mL, 10 mg/mL, and 15 mg/mL. Cement was hand mixed and placed in cylindrical molds to create samples 6 mm in diameter and 12 mm in height. Samples were immersed in phosphate buffered saline solution and mechanically agitated at 37 °C. Fluid samples were taken at 1, 5, 10, 24, 48, and 96 hour time points and subjected to high performance liquid chromatography (HPLC) for quantification of doxycycline elution. Individual samples underwent mechanical compression at a rate of 25.4 mm/min pre- and post-elution. Mechanical testing data was recorded via test software and analyzed for calculation of yield and ultimate compressive strength (MPa) and compressive modulus (MPa). Additionally, samples underwent imaging by micro-computed tomography (μ CT) both pre- and post-elution for calculation of cement porosity via scanner software. Data was represented as mean \pm standard error [95% CI] and was analyzed between test groups utilizing both the repeated measures two-way analysis of variance (ANOVA) and two-way analysis of variance. Significance was set at P < 0.05. RESULTS SECTION: Overall, 15 mg/mL maintained a higher average eluted doxycycline concentration ($14.5 \pm 2.1 \mu\text{g/mL}$ [9.2 - 19.9 $\mu\text{g/mL}$]) compared to both 5 mg/mL ($5.8 \pm 1.1 \mu\text{g/mL}$ [3.1 - 8.6 $\mu\text{g/mL}$]; P = 0.036) and 10 mg/mL cement ($8.4 \pm 0.9 \mu\text{g/mL}$ [6.0 - 10.9 $\mu\text{g/mL}$]; P = 0.052). Cumulative release of doxycycline (μg) throughout the experiment is shown in Figure 1. Ultimate strength (Figure 2) was significantly decreased in the post-elution samples compared to pre-elution samples in both the 10 mg/mL (P = 0.001) and 15 mg/mL (P = 0.004) test groups.

Similarly, the compressive modulus (Figure 1) was significantly decreased between pre- and post-elution samples in 0 mg/mL (P = 0.043), 10 mg/mL (P = 0.022) and 15 mg/mL (P = 0.010) test groups. There were no significant differences in cement porosity between groups pre- and post-elution and between doxycycline concentrations. DISCUSSION: ABCs are a significant source of morbidity for young patients with a high recurrence rate despite gold standard treatment curettage and bone grafting. We propose that using doxycycline loaded bone cement at time of curettage may be a viable alternative treatment algorithm. In this study, we demonstrated a dose-dependent response in ultimate strength and compressive modulus with addition of doxycycline to calcium phosphate cement. Our study did not identify changes in sample porosity, pre- or post-elution, suggesting the addition of doxycycline may not initially interfere with the cement curing process. From this foundational research, further studies may be performed to determine ideal concentrations of doxycycline to maximize drug release and mechanical strength. We can begin to develop alternative treatment algorithms to reduce the morbidity associated with treatment and recurrence of aneurysmal bone cysts.

Davis J, David B, **Gibson D** and **Sokhandon F** (2017). "Increasing ACR appropriateness criteria compliance among ordering physicians." *Pediatric Radiology* 47(Sup 1): S205.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Disclosures: All authors have disclosed no financial interests, arrangements or affiliations in the context of this activity. Purpose or Case Report: Despite countless hours of work by experts in radiology and other fields to create the ACR Appropriateness Criteria, there remains a lack of understanding by ordering physicians on how and when to access the guidelines. The goal of this project is to identify the areas of misunderstanding among the clinicians at our institution and provide lectures in an attempt to improve compliance with the ACR Appropriateness Criteria. Methods&Materials: A lecture series was created for various residency programs at our institution in an attempt to increase awareness of the ACR Appropriateness Criteria and give important background information on the use of contrast media, radiation safety, and imaging during pregnancy. Lectures were created for Pediatrics, Emergency Medicine, Internal Medicine, and Family Medicine residency programs. For Emergency Medicine and Internal Medicine, two lectures were delivered (body imaging and neurologic imaging). In total, approximately 150 resident physicians have participated in this ongoing project at this time. This will also be given as a Grand Rounds presentation to staff pediatricians within our hospital system (approximately 400 invitees). Each lecture is composed of instructions on accessing the ACR appropriateness criteria, explanation of the methodology, radiation safety, contrast media safety, and example cases. Participants are provided with a short pretest before the lecture and a short post test after the lecture. A follow-up survey is sent to the participants 3-4 months after the lectures to assess for retention of material, perceived utility of this service, and degree to which the lecture changed daily practices. Results: Results of the pre and post test examinations demonstrated a general lack of knowledge regarding the material presented, with pretest score averaging 61.7%. After the lecture, there was improvement across all groups tested with post test score averaging 86.0%. In the groups that have received this lecture series in consecutive years, there has not been adequate recall of the material covered. Conclusions: Providing educational lectures to the clinicians at our institution increases awareness of the ACR Appropriateness Criteria and other relevant topics including radiation safety and contrast media safety. The lack of recall from year to year underscores the importance of regularly refreshing our colleagues' knowledge on the subject matter. We hope that by continuing to educate on these topics we can ensure ongoing efficacious use of radiology.

De la Huerta I, Todorich B, Thanos A and **Randhawa S** (2017). "Cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy presenting with unilateral purtscherlike retinopathy." *JAMA Ophthalmology* 135(5): 502-503.

[Full-Text](#)

Department of Ophthalmology

Devries JM and Kauper M (2017). "Beaumont Health GME policy on Annual Program Evaluations (APE's) & improvement plans (iCollaborative)." MedEdPortal Resource ID 4436

[Full-Text](#)

Department of Pediatrics

This resource describes procedures for completing Annual Program Evaluations, lists Program Performance Indicators, and briefly describes the development of Improvement Plans.

Ding D, Starke RM, Kano H, Lee JYK, Mathieu D, Pierce J, Huang P, Missios S, Feliciano C, Rodriguez-Mercado R, Almodovar L, **Grills IS**, Silva D, Abbassy M, Kondziolka D, Barnett GH, Lunsford LD and Sheehan JP (2017). "Radiosurgery for unruptured brain arteriovenous malformations: An international multicenter retrospective cohort study." Neurosurgery 80(6): 888-898.

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Department of Radiation Oncology

Ding D, Starke RM, Kano H, Lee JYK, Mathieu D, Pierce J, Huang PP, Feliciano C, Rodriguez-Mercado R, Almodovar L, **Grills IS**, Silva D, Abbassy M, Missios S, Kondziolka D, Barnett GH, Lunsford LD and Sheehan JP (2017). "Stereotactic radiosurgery for Spetzler-Martin Grade III arteriovenous malformations: An international multicenter study." Journal of Neurosurgery 126(3): 859-871.

[Request Form](#)

Department of Radiation Oncology

OBJECTIVE: Because of the angioarchitectural diversity of Spetzler-Martin (SM) Grade III arteriovenous malformations (AVMs), the management of these lesions is incompletely defined. The aims of this multicenter, retrospective cohort study were to evaluate the outcomes after stereotactic radiosurgery (SRS) for SM Grade III AVMs and to determine the factors predicting these outcomes. METHODS: The authors analyzed and pooled data from patients with SM Grade III AVMs treated with SRS at 8 institutions participating in the International Gamma Knife Research Foundation. Patients with these AVMs and a minimum follow-up length of 12 months were included in the study cohort. An optimal outcome was defined as AVM obliteration, no post-SRS hemorrhage, and no permanently symptomatic radiation-induced changes (RICs). Data were analyzed by univariate and multivariate regression analyses. RESULTS: The SM Grade III AVM cohort comprised 891 patients with a mean age of 34 years at the time of SRS. The mean nidus volume, radiosurgical margin dose, and follow-up length were 4.5 cm³, 20 Gy, and 89 months, respectively. The actuarial obliteration rates at 5 and 10 years were 63% and 78%, respectively. The annual postradiosurgery hemorrhage rate was 1.2%. Symptomatic and permanent RICs were observed in 11% and 4% of the patients, respectively. Optimal outcome was achieved in 56% of the patients and was significantly more frequent in cases of unruptured AVMs (OR 2.3, p < 0.001). The lack of a previous hemorrhage (p = 0.037), absence of previous AVM embolization (p = 0.002), smaller nidus volume (p = 0.014), absence of AVM-associated arterial aneurysms (p = 0.023), and higher margin dose (p < 0.001) were statistically significant independent predictors of optimal outcome in a multivariate analysis. CONCLUSIONS: Stereotactic radiosurgery provided better outcomes for patients with small, unruptured SM Grade III AVMs than for large or ruptured SM Grade III nidi. A prospective trial or registry that facilitates a comparison of SRS with conservative AVM management might further clarify the authors' observations for these often high-risk AVMs. © AANS, 2017.

Dupont E, Berger A, Tsangaris T, Martinez R, Garcia-Cantu C, Fenton A, Howard-McNatt M, Consorti E, Pandya S, **Brown E**, Lum S, Gallagher K, Whitacre E, Butler M, McPartland T and Chagpar A (2017). "SHAVE2: A multicenter trial of cavity shave margins." Annals of Surgical Oncology 24(2): 183-184.

[Full-Text](#)

Department of Surgery

Background/Objective: A recent single-center randomized trial, published in the New England Journal of Medicine, demonstrated that resection of cavity shave margins can reduce positive margin and reexcision rates in patients undergoing partial mastectomy. The current trial seeks to validate these findings in a larger

multicenter study across many practice settings Methods: Inclusion/Exclusion Criteria: The targeted total sample size across all sites is 400 patients. All patients who had a core biopsy for diagnosis of stage 0-3 breast cancer for which a partial mastectomy is planned, including any who received neoadjuvant therapy, are eligible. Exclusion criteria include metastatic disease, plan for total mastectomy, excisional biopsy for diagnosis, previous or concurrent history of another breast cancer in the ipsilateral or contralateral breast, and plan for intraoperative radiation therapy. Methods: After local institutional review board approval, sites undergo a remote site initiation visit (SIV) with the coordinating center (CC). Source documentation, including signed informed consent, is reviewed centrally at the CC and eligibility confirmed. At the time of surgery, surgeons are instructed to perform their standard partial mastectomy, including the excision of selective shave margins on the basis of intraoperative imaging or gross analysis. Intraoperatively, a phone call is made to the CC, who confirms patient identification and that the surgeon is ready to close. The patient is randomized 1:1 to either have additional circumferential cavity shave margins taken ("shave") or to close ("no shave"). Local sites send source documentation to the CC where data collection, entry and analysis is performed. The research associate at the CC will contact patients at 1 and 5 years for patient-reported outcomes. Results: Outcome Measures: Primary outcome measures are positive margin and re-excision rates. Positive margins are defined as tumor at ink for patients with invasive disease and margins of < 2 mm for those with DCIS. Secondary outcome measures include volume of tissue excised, patient-reported outcomes including quality of life and cosmesis, time to adjuvant therapy, and recurrence rates. Patients will be followed for 5 years' post-surgery. Conclusions: To be determined - trial in progress.

Dykowski S, Ahmed M, Tooley T, Helland T and Barremkala M (2017). "Utilizing medical students' attitudes toward whole body donation in developing a whole body donation program." *FASEB Journal* 31(1): 733.732.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

INTRODUCTION The Biomedical Sciences department at the Oakland University William Beaumont School of Medicine (OUWB) aspires to start a body donation program in association with Oakland University. Understanding OUWB medical students' attitudes towards a whole body donation program and its advertisement will help better direct the department in designing a donation program that can be successful and align with students' values. A secondary goal of this study is to gauge medical student awareness of the body donation process to determine if an educational intervention should be introduced in the future. **METHODS** An online survey was sent to first-year OUWB students to be completed prior to their first gross anatomy lab in August 2016 to determine students' attitudes prior to dissection exposure. The survey included questions regarding demographics, past anatomical education, and Likert scale questions involving perceptions of body donation. The same group of students was surveyed again 8 weeks (halfway mark) into the semester to assess for any changes in their attitudes. Data will be collected through December 2016 and a paired t-test will be used to analyze the collected results. **RESULTS** Of the 126 students eligible to participate, 69 students responded to the survey prior to the first dissection; 42 students (62.7%) identified themselves as female and the average age of students was 23.5 ± 2.08 . Only 10 students (14.1%) felt that body donation programs should not advertise publicly while 21 students (30.4%) were neutral and 38 students (55.1%) either somewhat or strongly agreed with advertising publicly. Students felt most comfortable receiving information about whole body donation via pamphlet (65 students, 94.2%); social media (30 students, 43.48%), billboard (11 students, 15.94%) and radio (11 students, 15.94%) advertisements followed. 61 students (89.7%) did not know how to register for whole body donation, and 63 students (91.3%) were neutral or in favor of learning more about the donation process. These results will be compared with the postdissection responses in December 2016. **CONCLUSION** Preliminary results indicate that students are in support of developing a whole body donation program that utilizes various methods of public advertisement. Student awareness of the whole body donation registration process is lacking and the majority of students expressed interest in learning more about the process, thus supporting the need for an educational intervention in the future. Analysis of the pre- and post-dissection surveys in December 2016 will determine if dissection experience influences students' attitudes towards whole body donation.

Eisho S, Salem NM, Hoffman JL, Koerber JM and **Smythe MA** (2017). "Major bleeding with apixaban in atrial fibrillation: patient characteristics, management, and outcomes." *Pharmacotherapy* 37(6): E47.

[Request Form](#)

Department of Biomedical Sciences (BHS)

El Sayed SK and **Niculescu I** (2017). "Vertical integration of basic science and clinical medicine during case based learning sessions for third year medical students." *FASEB Journal* 31(1): 576.520.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Department of Internal Medicine

Vertical integration of basic sciences with clinical teaching has emerged as an important issue in medical education. We describe a teaching method in which a case-based learning session was used to implement vertical integration of basic physiology and pathophysiology with an internal medicine clinical case. Third year medical students were introduced to an internal medicine case by a clinical faculty member. In the first part of the session the clinician identified the key questions that students would need to address in order to understand the pathophysiology and to develop a differential diagnosis. Next, students engaged in self-directed learning to answer the previously identified questions. Students were able to work either individually or in pairs or as a group. In the next part of the session a biomedical scientist presented the relevant underlying science that provided a context for the case. Finally, the scientist and the clinician worked together to show how the basic and clinical content were integrated and to engage the students in the teaching process. An evaluation survey revealed that the students held positive attitudes toward such integrated instruction.

Evans MA, Sugihara EM and **Chan EY** (2017). "Acquired external auditory canal atresia: A comparison of acellular dermal matrix and split-thickness skin grafting techniques." *Otology & Neurotology* 38(8): 1149-1152.

[Full-Text](#)

Department of Surgery

Ezekwudo DE, Chacko R, Gbadamosi B, Batool S, **Gaikazian S**, Warkentin TE, Sheppard JAI and **Jaiyesimi I** (2017). "Apixaban for treatment of confirmed heparin-induced thrombocytopenia: A case report and review of literature." *Experimental Hematology and Oncology* 6(1): 1-8.

[Full-Text](#)

Department of Internal Medicine

Background: Heparin-induced thrombocytopenia (HIT) is a life and limb-threatening condition caused by the binding of platelet-activating antibodies (IgG) to multimolecular platelet factor 4 (PF4)/heparin complexes because of heparin exposure. The by-product of this interaction is thrombin formation which substantially increases the risk of venous and/or arterial thromboembolism. Currently, only one anticoagulant, argatroban, is United States Food and Drug Administration-approved for management of HIT; however, this agent is expensive and can only be given by intravenous infusion. Recently, several retrospective case-series, case reports, and one prospective study suggest that direct oral anticoagulants (DOACs) are also efficacious for treating HIT. We further review the literature regarding current diagnosis and clinical management of HIT. Case presentation: A 66-year-old male patient developed HIT beginning on day 5 post-cardiovascular surgery; the platelet count nadir on day 10 measured $16 \times 10^9/L$. Both the PF4-dependent ELISA and Serotonin-release assay were strongly positive. Despite initial anticoagulation with argatroban (day 6), the patient developed symptomatic Doppler ultrasound-documented bilateral lower extremity deep vein thrombosis on day 14 post-surgery. The patient was transitioned to the DOAC, apixaban, while still thrombocytopenic (platelet count 108) and discharged to home, with platelet count recovery and no further thrombosis at 3-month follow-up. Conclusions: We report a patient with serologically confirmed HIT who developed symptomatic bilateral lower limb deep vein thrombosis despite anticoagulation with argatroban. The patient was switched to oral apixaban and made a complete recovery. Our patient case adds to the emerging literature suggesting that DOAC therapy is safe and efficacious for management of proven HIT. © 2017 The Author(s).

Faraj K, Dave CN, Patel K, **Seifman B**, **Vartanian S**, Frontera R, Nelson R, **Hafron J** and Schervish EW (2017). "A retrospective comparative outcomes and cost analysis of office based ultrasound guided renal mass biopsy performed by urologists and standard hospital biopsies for small renal masses." [Urology Practice](#). ePub Ahead of Print.

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OUWB Medical Student Author

Department of Urology

Department of Diagnostic Radiology and Molecular Imaging

Flaherman VJ and **Maisels MJ** (2017). "ABM Clinical Protocol #22: Guidelines for management of jaundice in the breastfeeding infant 35 weeks or more of gestation - revised 2017." [Breastfeeding Medicine](#) 12(5): 250-257.

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Department of Pediatrics

A central goal of The Academy of Breastfeeding Medicine is the development of clinical protocols free from commercial interest or influence for managing common medical problems that may impact breastfeeding success. These protocols serve only as guidelines for the care of breastfeeding mothers and infants and do not delineate an exclusive course of treatment or serve as standards of medical care. Variations in treatment may be appropriate according to the needs of an individual patient.

Fortunato JT, **Wasserman JA** and **Menkes DL** (2017). "Nonmaleficence, nondisclosure, and nocebo: Response to open peer commentaries." [American Journal of Bioethics](#) 17(7): W4-W5.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

Department of Neurology

Fortunato JT, **Wasserman JA** and **Menkes DL** (2017). "When respecting autonomy is harmful: A clinically useful approach to the nocebo effect." [American Journal of Bioethics](#) 17(6): 36-42.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

Department of Neurology

Nocebo effects occur when an adverse effect on the patient arises from the patient's own negative expectations. In accordance with informed consent, providers often disclose information that results in unintended adverse outcomes for the patient. While this may adhere to the principle of autonomy, it violates the doctrine of primum non nocere, given that side-effect disclosure may cause those side effects. In this article we build off previous work, particularly by Wells and Kaptchuk (2012) and by Cohen (2013), to suggest ethical guidelines that permit nondisclosure in the case when a nocebo effect is likely to occur on the basis of nonmaleficence. We accept that that autonomy vis-a-vis informed consent must be forestalled, but salvage much of its role by elaborating a practical clinical approach to postencounter follow-up. In doing so, we reconcile a clinically practicable process of determining conditions of disclosure with long-standing ethical commitments to patients.

Franklin B, Mittleman M and Lavie C (2017). "Acute cardiac events and the preventive role of regular exercise." [The Medical Roundtable General Medicine Edition](#). ePub Ahead of Print.

[Request Form](#)

Department of Internal Medicine

Friedman P, **Shah I** and **Ogunyemi D** (2017). "System, provider, patient, and placental factors associated with neonatal hypoxia in a single hospital system." [Obstetrics and Gynecology](#) 129(Sup): 32S-33S.

[Request Form](#)

OUWB Medical Student Author

Department of Obstetrics and Gynecology

INTRODUCTION: This is a systematic and collaborative review to determine multifactorial correlates of neonatal hypoxic conditions. **METHODS:** A systematic review was performed on all term neonates diagnosed with hypoxic conditions by a designated review team using a published morbidity form with at least 2 different reviewers extracting data from each case followed by a group discussion for consensus. **RESULTS:** Of 16,890 term singleton pregnancies from 2013-2014, 54 cases of neonatal hypoxia were identified, including hypoxicischemic encephalopathy (10, 18.5%), meconium aspiration syndrome (9, 16.7%), hypoxemia of the newborn (29, 53.7%), perinatal asphyxia (2, 3.7%), and other acidosis of the newborn (4, 7.4%). Obstetrical risk factors were present in 94.4%, including category 2 fetal heart rate patterns (20, 29%), repeat cesarean delivery (8, 11.6%), chorioamnionitis (5, 7.2%), birth defects (5, 7.2%), labor dystocia (4, 5.8%), IUGR (4, 5.8%), and abnormal biophysical profile (4, 5.8%). Placental pathology was present in 35 cases (64.8%) and absent in 9 cases (16.7%), with another 10 cases (18.5%) where the placenta was not submitted to pathology. The most common findings were thrombus (n = 14, 20.9%), inflammation (16, 23.9%), meconium staining (12, 17.9%), and infarcts (8, 11.9%). From a systems-based view, potential contributors to morbidity were problems with diagnosis (9, 16.7%), treatment (13, 24.1%), documentation (7, 13.5%) and team communication (3, 5.6%). Opportunities to improve care were felt to be present in 19 cases (35.2%). **CONCLUSION:** Neonatal hypoxic conditions are rare and are associated with significant prenatal morbidity. In a minority of cases, opportunities to alter care may be possible.

Gaines N, Gupta P, Khourdaji AS, Ehlert M, **Parikh K, Kohli H** and **Sirls LT** (2017). "Radiographic misdiagnoses after periurethral bulking agents." [Female Pelvic Medicine & Reconstructive Surgery](#). ePub Ahead of Print.

[Full-Text](#)

OUWB Medical Student Author

Department of Urology

OBJECTIVES: Injectable urethral bulking agents are commonly used to manage stress urinary incontinence. Urologic or other symptoms may prompt pelvic imaging at a later date, when bulking agents may be visualized and incorrectly interpreted. Our goal was to evaluate the incidence of misdiagnosis and which pathologies were the most common misinterpretations and their frequency. **METHODS:** All records were reviewed for patients who underwent periurethral injection for stress urinary incontinence for pelvic imaging after treatment from 2005 to 2015. Radiological reports were reviewed for any description potentially related to injection therapy, and descriptive statistics performed. **RESULTS:** A total of 528 patients underwent injection of a urethral bulking agent. Of these, 79 patients (15%) had a total of 111 additional abdominal or pelvic imaging studies performed with abnormal periurethral findings mentioned. Thirty-nine (35%) of 111 studies were correctly interpreted as urethral bulking agents, and in 72 (65%) of 111 studies, the urethral bulking agents were not correctly identified. The most common misdiagnoses were bladder calcification (26; 23%), urethral diverticulum with stone (12; 11%), periurethral calcification (9; 8%), unknown pelvic density (8; 7%), and mass suspicious for malignancy (6; 5%). **CONCLUSIONS:** Urethral bulking agents commonly were not mentioned on subsequent imaging but, when commented on, were misinterpreted 65% of the time including worrisome pathologies (diverticulum with stone, unknown mass, and malignancy), requiring subsequent evaluation and potentially procedural/surgical management. It is critical for the ordering clinician to inform the radiologist of this history and for radiologists to consider bulking agents in the differential diagnosis of radiographic findings in this location.

Gaines N, **Odom BD, Killinger KA** and **Peters KM** (2017). "Pudendal neuromodulation as a treatment for persistent genital arousal disorder-a case series." Female Pelvic Medicine & Reconstructive Surgery. ePub Ahead of Print.

[Full-Text](#)

OUWB Medical Student Author

Department of Urology

BACKGROUND: Persistent genital arousal disorder (PGAD) is a rare life-altering condition characterized by unwanted, uncomfortable genital sensations or spontaneous orgasms without physical or emotional stimulation. Its etiology remains unclear, and a variety of treatments have been attempted with incomplete resolution. We propose that chronic pudendal neuromodulation (CPN) may be a useful treatment for PGAD symptoms. **METHODS:** A retrospective chart review was performed for women older than 18 years with a diagnosis of PGAD that had staged neuromodulation with placement of a tined lead at the pudendal nerve. Demographic, operative, and postoperative data were collected. A survey was then sent to these women to assess additional demographic data, preoperative and postoperative symptoms, and patient satisfaction. Descriptive statistics were performed. **RESULTS:** Six women underwent CPN for PGAD. Mean age was 52 (SD, 9) years. Five (83%) of 6 were still implanted at time of survey, at a mean of 38 months after implantation; 1 device was removed for nonuse. Four of 6 completed surveys and were still using their device. Three of 4 had met their treatment goals and were satisfied with CPN; 3 of 4 felt CPN was the most useful treatment modality they had used overall. Chronic pudendal neuromodulation also improved chronic pelvic pain (4/4), bowel function (3/4), and bladder function (3/4). **CONCLUSIONS:** Chronic pudendal neuromodulation can be an effective treatment for decreasing frequency of PGAD symptoms and providing symptom relief.

Ganapini V, Jaurigue M, **Amin M, Ghaith G** and **Cappell MS** (2017). "ERCP for diagnosis and extraction of choledochal phytobezoar causing right upper quadrant abdominal pain and cholestasis in a patient without prior sphincterotomy or biliary instrumentation." Gastrointestinal Endoscopy 85(6): 1296-1298.

[Full-Text](#)

Department of Pathology

Department of Internal Medicine

Garg L, Garg J, Krishnamoorthy P, Ahnert A, **Shah N**, Dusaj RS and Bozorgnia B (2017). "The influence of pregnancy in patients with congenital long QT syndrome." Cardiology in Review 25(4): 197-201.

[Full-Text](#)

Department of Internal Medicine

Congenital long QT syndrome (LQTS) is a disorder of myocardial repolarization and is characterized by a prolonged QT interval on AN electrocardiogram. A prolonged QT predisposes patients to an increased risk of syncope and sudden cardiac death secondary to polymorphic ventricular tachycardia. Several mutations linked to the LQT syndrome have been identified, the most common of which have been found in the potassium channel KCNQ1 (LQT1) and hERG (LQT2) genes and in the sodium channel SCN5A (LQT3) gene. Female gender is an independent risk factor for the development of torsades de pointes (TdP) in LQTS. Furthermore, while pregnancy may be associated with protection against cardiac events in LQTS, the 9-month post-partum period represents a time of increased arrhythmogenicity. Interestingly, these cardiac events during the post-partum period are more common in patients with LQT2. The precise mechanisms that influence the cardiac repolarization during the post-partum period are unclear. Beta-blockers are considered reasonably safe during pregnancy and should be continued or initiated in patients with LQTS to reduce the risk of cardiac events. Implantable cardioverter defibrillators are safe in pregnancy, and there is no evidence that pregnant women with these devices are at any greater risk for adverse complications solely on the grounds of having the device.

Gemechu JM, Geneti SA, Zenebe AM, Ewnetu SA and Wirtu AT (2017). "Persistent metopic suture and extra sacral foramina: Clinically significant anatomical variants." FASEB Journal 31(1): 896.815.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Lack of knowledge of variability in human morphology and its magnitude compared to normal anatomy may

have significant clinical consequences. Accurate knowledge of anatomical variations provides important information in medicolegal issues, forensic interpretation, diagnostics, imaging and patient management including surgical procedures. It has been hypothesized that a substantial proportion of clinical malpractice is attributed to ignorance of anatomical variations. Therefore, this study aims to assess the variations of metopic suture, sacral foramen and biceps brachii muscle in twenty-four cadavers used for dissection as part of Gross anatomy course. The study was conducted in five medical schools in Ethiopia in 2015/2016 years. Critical observation, careful dissection and imaging were done accordingly. Our results show a complete persistence of metopic suture in 4.2 % of frontal bone, and the existence of five anterior and posterior sacral foramina in 4.0 % of sacral bone and biceps brachii with three heads of origin in 2.1 % of brachium. Altogether, the findings show the existence of anatomical variants of clinical importance that need special consideration in the diagnosis and treatment of this diversified population of Ethiopia with different socio-economic background and geographical origin.

Gilbert SM, Dunn RL, Miller DC, Montgomery JS, Skolarus TA, Weizer AZ, **Wood DP, Jr.** and Hollenbeck BK (2017). "Functional outcomes following nerve sparing prostatectomy augmented with seminal vesicle sparing compared to standard nerve sparing prostatectomy: Results from a randomized controlled trial." Journal of Urology 198(3): 600-607.

[Full-Text](#)

Department of Urology

Purpose Seminal vesicle sparing may reduce the risk of neurovascular bundle injury and improve functional outcomes after prostatectomy. While several observational studies have shown better functional outcomes following seminal vesicle sparing approaches, evidence from randomized trials is lacking. We performed a randomized controlled trial comparing functional and cancer control outcomes between nerve sparing prostatectomy augmented with seminal vesicle sparing and standard nerve sparing prostatectomy. Materials and Methods A total of 140 men with early stage prostate cancer were enrolled in a randomized phase II trial comparing nerve sparing prostatectomy augmented with seminal vesicle sparing to standard nerve sparing prostatectomy. Patient reported sexual and urinary functional scores were assessed prior to surgery, and 6 and 12 months postoperatively. Surgical margin status and prostate specific antigen recurrence were evaluated as secondary outcomes. Results There were no differences in sexual or urinary function scores after surgery between the study groups. The median urinary incontinence domain score was 92 in the nerve sparing group and 87.5 in the nerve plus seminal vesicle sparing group at 12 months ($p = 0.77$). Median sexual function domain scores were 73.7 in the nerve sparing group and 77.1 in the nerve sparing plus seminal vesicle sparing group at 12 months ($p = 0.29$). Margin status and 12-month biochemical recurrence were similar in the groups. Conclusions Recovery of continence and sexual function was similar between the groups in this randomized controlled trial. Seminal vesicle sparing did not negatively affect margin status or 12-month biochemical (prostate specific antigen) recurrence. These results suggest limited usefulness of seminal vesicle sparing prostatectomy. © 2017 American Urological Association Education and Research, Inc.

Giuliani M, Hope A, Guckenberger M, Mantel F, Peulen H, Sonke JJ, Belderbos J, Werner-Wasik M, Ye H and **Grills IS** (2017). "Stereotactic body radiation therapy in octo- and nonagenarians for the treatment of early-stage lung cancer." International Journal of Radiation Oncology Biology Physics 98(4): 893-899.

[Full-Text](#)

Department of Radiation Oncology

Gordon B, Dangayach N, Griffiths S, Kornspurn A, Davidson Z, Keough M, Wheelwright D, Sobotka S, Sharma V, Marin D, Gordon E, Bederson J, Mocco J and Mayer S (2017). "Caring for the whole person: Resilience, spirituality and religious coping in the neurocritical care environment." Neurology 88(16): S23.006.

[Request Form](#)

OUWB Medical Student Author

Objective: To determine the correlation between spirituality/religiosity and resilience in individuals admitted neurocritical care and compare to surrogate perceived patient spirituality/religiosity and resilience to Background: Resilience and spirituality have been well studied in psychiatric disorders but little is known

about how these factors influence outcomes in the neurocritical care setting. Individuals identified as resilient have better outcomes in disorders like major depression while spirituality has been shown to enhance an individual's level of reported resilience. Surrogate decision makers are important in patient centered decision-making. Bridging the gap between physiological and psychological factors as well as understanding surrogate perceptions is needed in neurocritical care as it may reveal important contradictions in patient, surrogate and physician expectations. Our hypothesis is patient reported resilience would correlate with spirituality/religiosity, and surrogate-reported patient attributes would correlate to patient-reported ones. Design/Methods: Since April 2016 among English speaking adult patients admitted to the Neuro ICU at Mount Sinai Hospital for 48 hours or longer, 67 surrogates and 61 patients were enrolled. Participants provided answers to two scales, the Connor-Davidson Resilience-10 and the Brief RCOPE. Data was analyzed using Social Science Statistics. Non-parametric Spearman correlation between the score totals from these scales were calculated. Results: According to patient reported scales of positive religious coping and resilience, there was no correlation between the two scores $r_s = -0.04$ $p = 0.75$. However, scores of surrogate perceptions of patient's positive religious coping were moderately correlated to scores of surrogate perceptions of patient resilience $r_s = .32$, $p = 0.007$. Conclusions: The differences seen in the patient reported resilience and spirituality/religiosity scales versus surrogate's reported perception of the patient's resilience and spirituality/religiosity may indicate some effects of "projection" by surrogates. The surrogate's view of the patient may be influenced by many factors while they are in a neurocritical care setting and this could impact surrogate decision-making in goals-of-care discussions.

Gould D, Patino G and Osula V (2017). "Creating a master list of neuroscience topics for preclinical medical education." FASEB Journal 31(1): 583.512.

[Full-Text](#)

Department of Biomedical Sciences (OU)

OUWB Medical Student Author

The objective of the current project is to describe the process by which neuroscience course content is selected in a highly-integrated, clinically-focused, systems-based curriculum. With newly conceived integrated systems-based curricula, where students get increased clinical exposure starting with year one, this often means less time spent covering foundational science principles. It is in this light that decisions on what material is necessary to prepare students for neurology clerkships and for performance on the United States Medical Licensing Examination (USMLE), must be made. In other words, it is no longer possible to 'cover it all' before starting the clinical phase of medical education. In order to determine course content in a structured and deliberate way, the faculty at the Oakland University William Beaumont School of Medicine (OUWB) was divided into 16 Discipline Teams. One of the tasks charged to each Discipline Team was to develop a Master List of topics that must be covered at some point in the preclerkship phase of medical school. The creation of a Master List is a critical first step in creating, implementing and evaluating any systems-based integrated curricula. Neuroscience course content on Moodle (course management system) was evaluated against the Master using an iSEEK word count, indicating the course covered 88% of topics. The First Aid (FA) books are the most widely used board preparation materials; their content was similarly evaluated, the books covered 83% of topics. Areas in the OUWB neuroscience course that may be lacking were identified and will be programmed in for subsequent iterations of the course.

Gould DJ, Mi M and Patino GA (2017). "Student directed learning in medical neuroscience curricula." International Journal of Medical Education 8(2017): 190-191.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Medical Library

Goyal V, Ali-Ahmed F, Patel M, **Haines DE** and **Wong WS** (2017). "Low flow, high power, short ablation duration - Is this the key to avoid collateral damage?" Heart Rhythm 14(5): S464.

[Request Form](#)

Department of Internal Medicine

Background: In the era of force-sensing catheter technology, there is concern about increasing rates of collateral injury during AF ablation of the thin posterior left atrial wall. Simply reducing ablation power may not be the best strategy. Objective: We hypothesized that radiofrequency (RF) ablation at high power and short duration will achieve similar results to low power and long duration and that high irrigation flow may reduce ablation efficacy in thin walled tissues. Methods: Fresh killed porcine ventricles (N=13) were superfused with 0.45% NaCl at 37°C. RF ablation was performed with a 4 mm catheter with contact force of 20 gmforce. Fixed delivered power was varied from 20-50 W, ablation time from 5-40 sec, and irrigation flow of 2 or 17 ml/min. Lesion dimensions including depth, maximum width, and surface width were recorded. Results: The data for 165 lesions is shown (fig). Lesion depth increased inverse-exponentially over time for all powers (left, similar data for 2 and 17 ml/min flow rates). The ablation time required to achieve 4 mm lesion depth decreased with increasing power (right). At all powers, high flow rates (17 ml/min) resulted in smaller surface lesion widths than low flow rates (2ml/min) with an average decrease of 9.9%, but lesion depth was only 1.8% deeper. Conclusion: Effective lesions can be performed with high power and short ablation durations, which could effectively reduce the time of RF ablation procedures and concentrate the heating to superficial depths potentially reducing collateral injury. Wider surface lesions can be achieved with low irrigation flow with similar depth when compared to high irrigation flow, resulting in more contiguous lesions. (Figuer Presented).

Grisby S, Pople B, Shaffer K and **Dekhne N** (2017). "Impact of breast MRI use on surgical treatment of breast cancer." Annals of Surgical Oncology 24(2): 125-126.

[Request Form](#)

Department of Surgery

Background/Objective: Studies have examined the utility of breast MRI in the management of breast cancer patients, and most found breast MRI increases the rate of mastectomy. Data is lacking as to whether MRI improves patient outcomes. The purpose of this study was to evaluate the effect of preoperative breast MRI on the surgical management of breast cancer patients at a high-volume breast care center. Methods: A retrospective chart review of breast cancer patients at Beaumont Health Royal Oak Breast Care Center from January 2007 - December 2015 was performed. Data was collected including, age, histology, laterality, type of biopsy, performance of MRI, lymph node surgery, and surgical treatment. We evaluated whether breast MRI had an impact on surgical treatment of patients with either ductal carcinoma in situ (DCIS), invasive ductal carcinoma (IDC), invasive lobular carcinoma (ILC), or a combination of IDC/ILC. We excluded patients who received neoadjuvant chemotherapy, with LCIS and missing information on MRI status, histology, or surgical treatment. Results: A total of 3,572 patients with a diagnosis of breast cancer were evaluated. The average age was 60.9 years; 33.2% of patients had mastectomies, and 45.4% had preoperative breast MRIs. There were 905 patients in DCIS group, 2,320 in IDC group, 282 in ILC, and 65 in IDC/ILC group. The data is consistent with a common effect of breast MRI on mastectomy rates across the 4 histology levels[Breslow-Day pvalue= 0.7; OR 1.68; 95% CI for OR: (1.45, 1.94)]. Mastectomies were more common in women with breast MRIs compared to women without breast MRIs for DCIS (41.2% vs. 29.6%; OR=1.67; 95% CI: 1.25, 2.22) and IDC patients (38.3% vs. 26.4%; OR=1.74; 95% CI: 1.45, 2.08). Mastectomy rates were higher for patients with breast MRIs compared to patients without breast MRIs for both the ILC group (42.0% vs. 36.6%; OR=1.27; 95% CI: 0.67, 2.15) and IDC/ILC group (48.3% vs. 33.3%; OR=1.87; 95% CI: 0.61, 5.75). Conclusions: Breast MRI increased mastectomy rates relative to patients without breast MRI controlling for histology. An analysis of the relationship between breast MRI and surgical treatment controlling for other variables should be performed.

Hajj Hussein I, Wunderlich T, Loftus S and Wedemeyer R (2017). "Characteristics of a good basic science teacher as perceived by medical students." FASEB Journal 31(1): 732.737.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Department of Medical Education

Background Medical curricula have changed focus to competencies acquired by the medical student and introduced new teaching strategies to reach the set objectives. The medical educator or basic science teacher is expected to develop accordingly and acquire basic characteristics and competencies to lead such a learning process. The question commonly asked: what are such characteristics? Aims The purpose of this study is to assess the characteristics of a basic science teacher as perceived by medical students at OUWB School of medicine. Methodology The study was conducted using a self-administered anonymous electronic survey (Qualtrics) administered to first through fourth year medical students with a covering letter explaining the project and goals. Results Descriptive analysis of the survey data was conducted on 24 items and means were calculated based on Likert scale ratings of 1 - 5, where 1 is not at all important and 5 is extremely important. Analysis revealed that students were most likely to report content knowledge (4.85), professionalism (4.79), learnercenteredness (4.76), and interpersonal skills (4.68) as the most important attributes for a biomedical sciences instructor to embody. Further, students felt that the least important attributes were when faculty used interactive teaching methods (3.9) and innovative teaching methods (3.2). Conclusion By learning more about medical students' perceptions of basic science and clinical instruction and about their perceptions of teacher effectiveness, we will be able to tailor the training at OUWB in order to more effectively integrate and make relevant clinical application to basic science. Results from this study may also lead to recommendations for best practices in medical education at other types of institutions.

Hakim S, Desai T and **Cappell MS** (2017). "Esophageal hemangiomas with chest CT revealing a fine, curvilinear, calcified thrombus within the esophagus simulating acute esophageal fishbone impaction: First reported endoscopic photograph of GI manifestations in Maffucci syndrome." Gastrointestinal Endoscopy 85(6): 1293-1294.

[Full-Text](#)

Department of Internal Medicine

Hakim S, Maditz R, Lohani S and **Zarouk S** (2017). "A mystery case of blood leak alarm going on." American Journal of Kidney Diseases 69(4): A49.

[Full-Text](#)

Department of Internal Medicine

Hamstra DA, **Krauss D** and Buyyounouski MK (2017). "In regard to Morris et al." International Journal of Radiation Oncology • Biology • Physics 98(2): 481-482.

[Full-Text](#)

Department of Radiation Oncology

Hanba C, Svider PF, **Jacob JT**, Guthikonda M, Liu JK, Eloy JA and Folbe AJ (2017). "Lower airway disease and pituitary surgery: Is there an association with postoperative cerebrospinal fluid leak?" Laryngoscope 127(7): 1543-1550.

[Full-Text](#)

Department of Neurosurgery

Objectives/Hypothesis: To explore the relationship between lower airway disease and postoperative cerebrospinal fluid (CSF) rhinorrhea among patients undergoing pituitary surgery Study Design: Retrospective review. Methods: A retrospective review of the Healthcare Cost and Utilization Project's 2013 National Inpatient Sample was conducted to characterize the hospital stay and surgical outcomes of patients undergoing pituitary surgery. Patients with lower airway disease (including chronic obstructive pulmonary disease and asthma) were compared to a disease-free population identifying demographics and complications over-represented in the lower airway group. Results: The majority of hypophysectomies (92.1%) were performed via a transsphenoidal approach. Among transsphenoidal patients, individuals with asthma (92.8% of the lower airway disease cohort) harbored a greater postoperative CSF leak rate (4.7% vs.

2.7%, $P = .022$), and were more likely to develop postoperative diabetes insipidus (6.2% vs. 4.1%, $P = .024$) and neurological complications (13.0% vs. 9.6%, $P = .010$) when compared to a lower airway disease-free cohort. Patients with CSF rhinorrhea had longer lengths of stay (7.8 days vs. 4.5 days, $P < .001$) and higher discharge costs (\$148,309 vs. \$76,246, $P < .001$). A binary logistic regression model identified having asthma ($P = .042$), being female ($P = .011$), and having gastroesophageal reflux disease ($P = .006$) as independent predictors of postoperative CSF rhinorrhea. Conclusions: Several patient comorbidities including asthma are associated with a greater risk of postoperative CSF rhinorrhea. Perioperative lower airway assessment and disease control may potentially decrease one's risk of this complication, although further inquiry is urgently needed to identify optimal preventive strategies.

Hankin M, Aschmetat A and **Niculescu I** (2017). "Essential anatomy in undergraduate medical curricula: Orthopedics and obstetrics and gynecology." *FASEB Journal* 31(1): 583.581.

[Full-Text](#)

Department of Internal Medicine

BACKGROUND The application of modern learning theory, the transition to integrated curricula, a desire for distributed learning across the medical education continuum, and decreased instructional hours has led to significant changes in teaching anatomy in undergraduate medical curricula. In response, some anatomists are attempting to refine what they cover (from a "fire hose" to a "garden hose"). In doing so, several important questions should be asked: "what anatomy is essential" and "for which group of learners?" If the goal is to provide foundational anatomical knowledge for the "generalist", then an obvious question is "what is a generalist?" Another approach is to provide "what all medical students need," but this seems concept seems elusive and poorly defined. Alternatively, if anatomical curricula are to be fine-tuned for students choosing different medical specialties, the question of what is essential should be parsed by specific residencies. This presentation reports the responses to the question of "what anatomy is essential" from residents at William Beaumont Hospital in Royal Oak, MI. **METHODS** The survey tool for this study, based on learning objectives published by The Anatomical Society (Smith et al., *J Anat* 228:15-23, 2016), presented anatomical structures in a regional context. For each structure (regional anatomical), participants were asked to base their responses on their clinical experience and address two questions: (1) an assessment of its clinical importance (scaled responses: 1-not important, 2-useful, 3-important, 4-essential), and (2) whether they knew it when needed (scaled responses: 1-not at all to 4- completely). Responses were voluntary and anonymous, and no incentives were offered. Designated residents from each program administered the surveys. **RESULTS** Residents in seven programs participated, but significant numbers of responses were received only from Orthopedics ($n=21$; 44%) and Obstetrics & Gynecology ($n=13$; 27%). Responses to clinical importance were grouped as "not essential" if less than 50% of scaled responses were 1 or 2; likewise, a structure was considered "essential" if greater than 50% of scaled responses were 3 or 4. Statistical analyses are ongoing and results will be presented and full summaries of outcomes will be available. **CONCLUSIONS** A key element of this research is that the outcomes are based on responses from residents, who not only use the anatomy in a clinical setting, but are also near-peers of medical students. This are important considerations when considering the distinction between the oft used measure for curricular success of passing USMLE Step 1 versus success in clinical experiences (clerkships) and for treating patients. A follow-up study is underway to examine responses from residents in non-surgical fields (internal medicine and family practice). Ultimately, this data should provide an evidence base from which curricular change with respect to anatomy may be better informed in creating courses (learning experiences) that are effective in the time available, that leave students with useful knowledge, and that allow students to acquire anatomical knowledge that is essential for their chosen field of medicine.

Hanzel GS, Dixon S and Goldstein JA (2017). "Prioritizing and combining therapies for heart failure in the era of mechanical support devices." *Interventional Cardiology Clinics* 6(3): 465-480.

[Full-Text](#)

Department of Internal Medicine

Technological advances have promoted challenges to prioritizing and combining therapies for heart failure. The concept of prioritization implies distinct but inextricably linked considerations. They may be viewed from

pathophysiologic, clinical, and procedural perspectives, encompassing analysis of hemodynamic status, anatomic considerations, and technical challenges. It is essential to consider factors, including conduction disease, renal and pulmonary function, hematological derangements, and so forth. These considerations allow determination of clinical goals, which determine prioritization and interventional strategies. These considerations then facilitate goal setting for medical and interventional therapies as definitive/destination, preservation/salvage, stepwise, bridge, or palliation.

Hasbrook M, Yonekawa Y, Van Laere L, Shah AR and **Capone A** (2017). "Bilateral persistent fetal vasculature and a chromosome 10 mutation including COX15." Canadian Journal of Ophthalmology. ePub Ahead of Print.

[Full-Text](#)

Department of Ophthalmology

Heintzman J, Bailey SR, DeVoe J, Cowburn S, Kapka T, **Duong TV** and Marino M (2017). "In low-income latino patients, post-Affordable Care Act insurance disparities may be reduced even more than broader national estimates: Evidence from Oregon." Journal of Racial and Ethnic Health Disparities 4(3): 329-336.

[Request Form](#)

OUWB Medical Student Author

BACKGROUND: Early survey evidence suggests a reduction of disparities in insurance coverage between Latinos and non-Hispanic Whites post-Affordable Care Act (ACA). These findings may not describe the insurance status of vulnerable, low-income Latino populations served in community health centers (CHCs) over the course of this policy change. Cross-sectional surveys also may be of limited use in describing longitudinal phenomena such as changes in health insurance status. **METHODS:** Using electronic health record (EHR) data, we compared the insurance status of N = 42,392 low-income patients served in 23 CHCs in Oregon, by race/ethnicity and language, over a period of 6 years straddling the implementation of ACA-related Medicaid expansion on January 1, 2014. **FINDINGS:** Prior to 2014, Spanish-preferring Latinos were more likely to be uninsured than English-preferring Latinos and non-Hispanic Whites. Among uninsured patients who returned for at least one visit in 2014, Spanish-preferring Latinos had the largest increase in insurance coverage rates, and all three racial/ethnic/language groups had similar rates of insurance coverage. There were no racial/ethnic/language differences between those who did and did not have visit in 2014. **CONCLUSION:** Among previously uninsured low-income patients returning to Oregon CHCs, insurance disparities were eliminated after Medicaid expansion, especially in Spanish-speaking Latinos. Further study is needed to understand the elimination of insurance disparities in this cohort.

Hinote BP and **Wasserman JA** (2017). Social and Behavioral Science for Health Professionals. Lanham, Maryland, Rowman and Littlefield.

[Request Form](#)

Department of Biomedical Sciences (OU)

Iskandar JP and **Hajj Hussein I** (2017). "Teach and learn in histology: An old approach revisited." FASEB Journal 31(1): 582.587.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

Background Innovative strategies to implement integrated medical curricula, especially those focusing on students' interactive learning, are becoming more relevant and are gaining both attention and major support. Learning by teaching is an old concept that has long been recognized which might fit these new changes. In fact, peer education as a concept, has also been there for ages, however, channeling efficiently the efforts of peers in a structured small group teaching, is a real challenge. Aims The purpose of this work was to apply the concept of teach and learn in a structured way during the endocrine system histology lab sessions as part of a self-directed and interactive learning approach. Methodology Every M2 student was invited to participate in this activity. Before coming to the endocrine system lab session, every student was responsible to prepare and teach the material assigned, to his or her group of peers according to a specific

set of learning objectives and making use of digital slides and histology modules. In addition, each student was required to write at least one NBME style question pertinent to the discussed material. Both in the presentation and in the questions, normal histology and histopathology material were integrated to stress the relevance of the material. Results During the lab session, each student presented what he or she has learned about the assigned histological and histo-pathological section/topic to the respective group. Each group was able to complete the entire activities during the lab session within the assigned time frame. In the last half of the hour, selected students from the class discussed clinical cases. After the completion of the lab, students provided feedback evaluations of their peers and of the session overall. Conclusion Using such a strategy allowed each student to be an active player in the interactive teaching process. This approach leads to better participation, involvement, and engagement of the students in the learning process all while reducing contact hours without sacrificing outcomes.

Jae SY, Babu AS, Yoon ES, Kurl S, Laukkanen JA, Choi YH and **Franklin BA** (2017). "Impact of cardiorespiratory fitness and risk of systemic hypertension in nonobese versus obese men who are metabolically healthy or unhealthy." [American Journal of Cardiology](#). ePub Ahead of Print.

[Full-Text](#)

Department of Internal Medicine

Few data are available regarding the influence of body phenotype on systemic hypertension (SH) and whether cardiorespiratory fitness (CRF) attenuates this relation. We tested the hypothesis that obesity phenotypes and CRF would predict incident hypertension, evaluating 3,800 Korean men who participated in 2 health examinations in 1998 to 2009. All participants were normotensive at baseline and were divided into 4 groups based on body mass index using the Asia-Pacific descriptors for obesity and metabolic health status and the National Cholesterol Education Program's adult treatment panel III (ATP-III) criteria. A metabolically healthy obese (MHO) phenotype was defined as a body mass index of ≥ 25 kg/m² with ≤ 2 metabolic abnormalities. CRF was directly measured by peak oxygen uptake, and the participants were divided into unfit and fit categories based on age-specific peak oxygen uptake percentiles. Compared with the metabolically healthy nonobese phenotype, MHO and metabolically unhealthy nonobese (MUNO) phenotypes were at increased risk of SH (relative risk [RR] = 1.47; 95% confidence interval [CI], 1.07 to 2.02 and 1.62, 1.21 to 2.16) after adjusting for potential confounders. Joint analysis showed that MHO or MUNO unfit men had 1.91 and 2.27 greater risk of incident SH, respectively. However, MHO fit men had no significant RR of incident SH (RR 1.37; 95% CI, 0.93 to 2.03), whereas MUNO fit men remained at increased risk (RR 1.48; 95% CI, 1.04 to 2.11) compared with their metabolically healthy nonobese fit counterparts. In conclusion, MHO and MUNO men were at increased risk of SH, but these risks were attenuated by fitness. © 2017 Elsevier Inc.

Jae SY, Kurl S, **Franklin BA** and Laukkanen JA (2017). "Changes in cardiorespiratory fitness predict incident hypertension: A population-based long-term study." [American Journal of Human Biology](#) 29(3): 1-5.

[Full-Text](#)

Department of Internal Medicine

Objectives We investigated whether long-term changes in cardiorespiratory fitness (CRF) predict the risk of incident hypertension, independent of risk factors, in initially normotensive men. **Methods** This prospective study from the Kuopio Ischemic Heart Disease Study included 431 male participants without hypertension who underwent symptom-limited maximal cardiopulmonary exercise testing at baseline and during a second examination, 11-years later, who were re-evaluated for hypertension at 20-year follow-up. Changes in CRF (%) were calculated as the difference in directly measured maximal oxygen uptake (VO₂max) between the baseline and second examination, and classified into decreasing tertiles as percentages. Hypertension was defined as systolic and/or diastolic blood pressure 140/90 mmHg or hypertension that required antihypertensive medication as diagnosed by a physician. **Results** During a 10-year follow-up after the second examination, 165 men (38%) developed hypertension. Men who demonstrated the largest decline in CRF between evaluations (-62.1% to -20.2%) had a 4.33-fold (95% CI 2.32-8.07, P<.001) risk of incident hypertension compared to men with the smallest decrease or improvement in CRF (-8.8% to 82.0%), after adjusting for age, follow-up duration, alcohol consumption, cigarette smoking, serum low and high density

lipoprotein cholesterol, body mass index, daily energy expenditure (kcal) via physical activity, glomerular filtration rate, and baseline systolic blood pressure and VO₂max. Conclusions The present findings indicate that more marked decreases in measured CRF over time are independently associated with the risk of incident hypertension in men, suggesting that CRF should be considered a causal risk factor to predict future hypertension.

Jayaschandran V, Gjorgova-Gjeorgjievski S, Atodaria A and **Christensen P** (2017). "Primary pulmonary synovial sarcoma: A rare malignancy." [American Journal of Respiratory and Critical Care Medicine](#) 195(Sup): A6591.

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Department of Internal Medicine

Jayaschandran V, Gjorgova-Gjeorgjievski S and **Siddique H** (2017). "Diffuse pulmonary meningotheliomatosis: A scary, yet benign picture." [American Journal of Respiratory and Critical Care Medicine](#) 195(Sup): A3425.

[Request Form](#)

Department of Internal Medicine

Jayaschandran V, Gjorgova-Gjeorgjievski S and **Siddique H** (2017). "An uncommon cause of miliary pattern of pulmonary nodules diffuse pulmonary meningotheliomatosis." [Respirology Case Reports](#) 5(4): e00238.

[Full-Text](#)

Department of Internal Medicine

Pulmonary meningothelial-like nodules are benign lesions that are often incidentally detected in surgically resected lung tissue. These nodules are usually asymptomatic and single. Rarely, they present as diffuse micronodules similar to the miliary pattern seen in tuberculosis or metastatic cancer. While diffuse meningothelial-like micronodules are usually benign, it is important to include this condition in the differential diagnosis of patients presenting with diffuse micronodules. We present the case of a 74-year-old asymptomatic female referred to the pulmonary clinic for evaluation of incidentally detected diffuse bilateral pulmonary nodules. A transbronchial biopsy established a diagnosis of diffuse pulmonary meningotheliomatosis, obviating the need for further invasive workup. She remains stable after more than 2 years of follow-up.

Jayaschandran V, Schuiteman E, Otoupalova E, Ginoya S, **Boura J** and **Dalal B** (2017). "Validation of APPS tool to predict mortality in moderate and severe acute respiratory distress syndrome." [Chest](#) 151(5): 141A.

[Full-Text](#)

Department of Biomedical Sciences (BHS)

Department of Internal Medicine

Kabolizadeh P, Chen YL, Liebsch N, Hornicek FJ, Schwab JH, Choy E, Rosenthal DI, Niemierko A and DeLaney TF (2017). "Updated outcome and analysis of tumor response in mobile spine and sacral chordoma treated with definitive high-dose photon/proton radiation therapy." [International Journal of Radiation Oncology Biology Physics](#) 97(2): 254-262.

[Full-Text](#)

Department of Radiation Oncology

Purpose: Treatment of spine and sacral chordoma generally involves surgical resection, usually in conjunction with radiation therapy. In certain circumstances where resection may result in significant neurologic or organ dysfunction, patients can be treated definitively with radiation therapy alone. Herein, we report the outcome and the assessment of tumor response to definitive radiation therapy. Methods and Materials: A retrospective analysis was performed on 40 patients with unresected chordoma treated with photon/proton radiation therapy. Nineteen patients had complete sets of imaging scans. The soft tissue and bone compartments of the tumor were defined separately. Tumor response was evaluated by the modified Response Evaluation Criteria in Solid Tumors (RECIST) and volumetric analysis. Results: With a median follow-up time of 50.3 months, the rates of 5-year local control, overall survival, disease-specific survival, and distant failure were 85.4%, 81.9%, 89.4%, and 20.2%, respectively. Eighty-four computed tomographic and magnetic

resonance imaging scans were reviewed. Among the 19 patients, only 4 local failures occurred, and the median tumor dose was 77.4 GyRBE. Analysis at a median follow-up time of 18 months showed significant volumetric reduction of the total target volume (TTV) and the soft tissue target volume (STTV) within the first 24 months after treatment initiation, followed by further gradual reduction throughout the rest of the follow-up period. The median maximum percentage volumetric regressions of TTV and STTV were 43.2% and 70.4%, respectively. There was only a small reduction in bone target volume over time. In comparison with the modified RECIST, volumetric analysis was more reliable, more reproducible, and could help in measuring minimal changes in the tumor volume. Conclusion: These results continue to support the use of high-dose definitive radiation therapy for selected patients with unresected spine and sacral chordomas. Assessment of tumor response to radiation therapy by volumetric analysis is superior to modified RECIST in chordoma patients. Evaluating the soft tissue target volume is an excellent indicator of tumor response. (C) 2016 Elsevier Inc. All rights reserved.

Kachur S, Chongthammakun V, Lavie CJ, De Schutter A, Arena R, Milani RV and **Franklin BA** (2017). "Impact of cardiac rehabilitation and exercise training programs in coronary heart disease." *Progress in Cardiovascular Diseases* 60(1): 103-114.

[Full-Text](#)

Department of Internal Medicine

Cardiovascular rehabilitation (CR) is the process of developing and maintaining an optimal level of physical, social, and psychological well-being in order to promote recovery from cardiovascular (CV) illness. It is a multi-disciplinary approach encompassing supervised exercise training, patient counseling, education and nutritional guidance that may also enhance quality of life. Beneficial CV effects may include improving coronary heart disease risk factors; particularly exercise capacity, reversing cardiac remodeling, and favorably modifying metabolism and systemic oxygen transport. We review the historical basis for contemporary CR, the indications and critical components of CR, as well as the potential salutary physiological and clinical effects of exercise-based CR. © 2017 Elsevier Inc.

Kaufman C, Cross M, **Dekhne N**, Devisetty K, Edmonson D, Gass J, Graham C, Gold L, Goyal S, Hall W, Hong R, Jones S, Kuske R, Pandya S, Phillips R, Schonholz S, Smith L and Tafra L (2017). "3-D implantable marker provides benefits for radiation targeting and cosmesis." *Annals of Surgical Oncology* 24(2): 258-259.

[Full-Text](#)

Department of Surgery

Background/Objective: Post-lumpectomy deformities of the breast occur in more than 30% of patients. Post-treatment correction of these defects is difficult, thus, there is a true opportunity for new surgical and radiation techniques to help improve patient outcomes. Oncoplastic techniques have provided some improvement; however, the extensive tissue re-arrangement during these procedures can result in a negative impact on radiation targeting. A unique 3-D implantable marker was designed to provide improved targeting, some degree of volume replacement and function as a tool for permanent marking of the tumor bed for long-term surveillance. We studied the effect of the device on visualization of the lumpectomy tumor bed during radiation targeting, its impact on boost treatment volumes, and impact on cosmetic outcome over a 3-year follow-up period. Methods: Following informed consent, eligible patients undergoing breast conservation with implantation of the bioabsorbable 3D implantable marker (BioZorb, Focal Therapeutics, Inc - Aliso Viejo, CA) were enrolled in a multi-center clinical registry. A total of 395 patients have been enrolled from 12 centers over the past 4 years (296 with follow-ups reported). Data include patient demographics, breast size, tumor characteristics, surgical and radiotherapy techniques, cosmesis, and follow-up. In each case, the device was sutured directly to the margins of the tumor bed during lumpectomy with or without oncoplastic closure techniques. The marker was utilized for boost or partial-breast irradiation (PBI) planning or treatment targeting. Results: Data on 296 patients with median follow-up 10 months (FU: 42% 0-12 months, 23% 12-24 months, 10% 24-48 months) was collected analyzed for this study. Median age was 64 years, 82% of women were postmenopausal, and 58% had one or more comorbidities. Breast size was evenly distributed between cup size B (29%), C (32%) and >D (35%). Cancers were in-situ (20%) and invasive (79%) measuring T1 (59.2%) and T2 (19.1%). Oncoplastic rearrangement with the implantable marker was used on

92% of patients at the time of lumpectomy (20.7% with minor mobilization of local tissue flaps, 71.5% with moderate/extensive tissue rearrangement). Re-excision (including mastectomy for extensive disease) occurred in 8.9% of patients. Infections occurred acutely (0-6 wk) in 6 patients, and in 1 patient the device was removed during surgical debridement of the postoperative infection. No cancer recurrences have been reported. The device was utilized by radiation oncologists for boost or PBI planning and treatment. Early reports regarding cosmetic appearance show a trend for excellent or good cosmesis (93% and 93%, 0-12 months post-surgery) as judged separately by both physicians and patients. Conclusions: These early findings suggest excellent cosmesis can be achieved in the vast majority (>90%) of patients undergoing BCS and implantation of this unique device. The combination of improved radiation planning and targeting to decrease treatment volumes and the 3D structure providing volume replacement and a mechanism for tissue ingrowth are likely factors contributing to the excellent cosmesis reported in these patients.

Kesarwani P, Kant S, **Prabhu A** and **Chinnaiyan P** (2017). "The interplay between metabolic remodeling and immune regulation in glioblastoma." *Neuro-Oncology*. ePub Ahead of Print.

[Full-Text](#)

Department of Pediatrics

Department of Radiation Oncology

The fields of tumor metabolism and immune oncology have both independently received considerable attention over the last several years. The majority of research in tumor metabolism has largely focused on the Warburg effect and its resulting biologic consequences, including energy and macromolecule production. However, recent investigations have identified elegant, multifaceted strategies by which alterations in tumor metabolism can also contribute towards a potent tolerogenic immune environment. One of the most notable is increased tryptophan metabolism through activation of the indoleamine 2,3-dioxygenase 1 (IDO1) and tryptophan 2,3-dioxygenase (TDO) pathways. However, this pathway represents one of numerous metabolic pathways that may modulate the immune system. For example, metabolites associated with aerobic glycolysis, adenosine, arginine, and prostaglandin metabolism have all been implicated in cancer-mediated immune tolerance and represent attractive therapeutic targets. In this review, we will provide an overview of the emerging interface between these two, timely areas of cancer research and provide an overview of strategies currently being tested to target these next generation, metabolic immune checkpoints.

Kotsopoulos J, Sopik V, **Rosen B**, Fan I, McLaughlin J, Risch H and al. e (2017). "Frequency of germline PALB2 mutations among women with epithelial ovarian cancer." *Familial Cancer* 16(1): 29-34.

[Full-Text](#)

Department of Obstetrics and Gynecology

Krout D, Rodriguez M, Brose SA, Golovko MY, Henry LK and **Thompson BJ** (2017). "Inhibition of the serotonin transporter is altered by metabolites of selective serotonin and norepinephrine reuptake inhibitors and represents a caution to acute or chronic treatment paradigms." *ACS Chemical Neuroscience* 8(5): 1011-1018.

[Request Form](#)

Department of Biomedical Sciences (OU)

Previous studies of transgenic mice carrying a single isoleucine to methionine substitution (I172M) in the serotonin transporter (SERT) demonstrated a loss of sensitivity to multiple antidepressants (ADs) at SERT. However, the ability of AD metabolites to antagonize SERT was not assessed. Here, we evaluated the selectivity and potency of these metabolites for inhibition of SERT in mouse brain-derived synaptosomes and blood platelets from wild-type (I172 mSERT) and the antidepressant-insensitive mouse M172 mSERT. The metabolites norfluoxetine and desmethylsertraline lost the selectivity demonstrated by the parent compounds for inhibition of wild-type mSERT over M172 mSERT, whereas desvenlafaxine and desmethylcitalopram retained selectivity. Furthermore, we show that the metabolite desmethylcitalopram accumulates in the brain and that the metabolites desmethylcitalopram, norfluoxetine, and desvenlafaxine inhibit serotonin uptake in wild-type mSERT at potencies similar to those of their parent compounds, suggesting that metabolites may play a role in effects observed following AD administration in wild-type and

M172 mice.

Kuang S and Gao BZ (2017). "In vitro synapse development in the cultured neuronal network formed from dissociated chick forebrain neurons." *FASEB Journal* 31(1): 861.815.

[Full-Text](#)

Department of Biomedical Sciences (OU)

The formation of in vitro synapses and the confirmation of their function in the cultured neuronal network formed from dissociated chick forebrain neurons (FBNs) were first studied in 1981 and 1993 by two different research groups. Since then, no more progress has been seen in the area, possibly due to the difficulty in maintaining a lifespan of the culture longer than 14 days. We have reported previously our successful establishment of the culture using high plating density of 2,000 cells per mm² on the microelectrode array (MEA) platform that can achieve a lifespan of several months in culture. This abstract presents our findings on the early development of the structure and the function of the synapses during the first three weeks in culture. Chick FBNs were cultured on costar plates and MEA chips at the same time and with the same plating densities. Immunocytochemistry was used to examine the density/distribution of the synapses of the neuronal network on costar plates over time. MEA was used to record spontaneous spiking activity (SSA) from the neuronal network on its surface, which demonstrates successful network-wide synaptic transmission. Results show that 1) the development of synaptic structure and function in vitro is faster than reported in vivo; 2) synapses function right after their formation as indicated by the rapid increase in the number of active channels net-wide, with the peak of the active channel count appearing at 12 days in vitro (DIV) at our plating density; 3) SSA recorded in active channels shows a well-coordinated firing pattern shortly after these channels became active; and 4) active channel development is faster in the presence of 2% fetal bovine serum before peak active channel count was reached. These findings suggest that the early synapse development characterized in this study can be used as a convenient non-mammalian model for a wide spectrum of studies with various research purposes, such as assessing the effects of pharmacological agents or neurotoxic chemicals on the structure and function of the synapses. (Figure presented).

Kuang SY (2017). "Tonicity and osmolarity, why are they confusing?" *FASEB Journal* 31(1): 576.555.

[Full-Text](#)

Department of Biomedical Sciences (OU)

In teaching body fluids as a part of physiology, the concept of osmolarity seems to be a bit challenging to only a small fraction of students, but when the concept of tonicity is added, the portion of students who are confused increases. The author noticed that the definition and explanation of tonicity in many lecture materials, including textbooks, are inaccurate and inconsistent. In this presentation, the author will 1) summarize and analyze the definitions of osmolarity and tonicity; 2) explain the implicit logic underlying these definitions and identify the cause(s) of confusion in teaching and learning the two concepts; and 3) share teaching strategies based on this logic to avoid confusion and make teaching and learning of the two concepts easier.

Kurdziel MD, Salisbury M, **Kaplan L**, Maerz T and **Baker KC** (2017). "Exposure of articular chondrocytes to wear particles induces phagocytosis, differential inflammatory gene expression, and reduced proliferation." *Journal of Materials Science: Materials in Medicine* 28(7): 1-9.

[Full-Text](#)

Department of Orthopedic Surgery

Abstract: The production of wear debris particulate remains a concern due to its association with implant failure through complex biologic interactions. In the setting of unicompartmental knee arthroplasty (UKA), damage and wear of the components may introduce debris particulate into the adjacent, otherwise, healthy compartment. The purpose of this study was to investigate the in vitro effect of polymeric and metallic wear debris particles on cell proliferation, extracellular matrix regulation, and phagocytosis index of normal human articular chondrocytes (nHACs). In culture, nHACs were exposed to both cobalt-chromium-molybdenum (CoCrMo) and polymethyl-methacrylate (PMMA) wear debris particulate for 3 and 10 days. At 3 days, no significant difference in cell proliferation was found between control cells and cells exposed to both CoCrMo

or PMMA particles. However, cell proliferation was significantly decreased for CoCrMo exposed nHACs at both 6 ($P < 0.001$) and 10 days ($P < 0.001$) and PMMA at 10 days ($P < 0.001$). Target gene expression displayed both a time- and material-dependent response to CoCrMo and PMMA particles. Significant differences in COL10A1, ACAN, VCAN, IL-1 β , TNF- α , MMP3, ADAMTS1, CASP3, and CASP9 regulation were found between CoCrMo and PMMA exposed nHACs at day 3 with gene regulation returning to near baseline at 10 days. Results from our study indicate a role of wear debris induced cartilage degeneration after exposure to polymeric and metallic wear debris particulate, suggesting an additional pathway of cartilage breakdown, potentially manifesting in traditional clinical symptoms. Graphical Abstract: [InlineMediaObject not available: see fulltext.].

LaBan MM (2017). "An intercostal muscular hernia as a consequence of intercostal nerve root compromise after trauma to the thoracic spine." *American Journal of Physical Medicine and Rehabilitation* 96(4): E68-E69.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

"True" intercostal hernias, that is, those containing both pleura and lung components, occur infrequently. Only 300 cases have been reported since Rolland's initial description in 1499. Rarer still are intercostal muscle hernias, which occur without containing pulmonary components. In both instances, males predominate, usually a consequence of direct blunt chest trauma. In many instances, recognition of the intercostal muscle hernia may be delayed from weeks to months, its diagnosis masked by more obvious evidence of physical trauma.

Lee JJ, Lee RJ and **Fahim DK** (2017). "Prognostic factors and survival outcomes in patients with chordoma in the United States: A population-based analysis." *World Neurosurgery*. ePub Ahead of Print.

[Full-Text](#)

OUWB Medical Student Author

Department of Neurosurgery

Li M, Zhang L, Xiang Z, Castillo E and **Guerrero T** (2017). An improved fuzzy C-means algorithm for brain MRI image segmentation. *2016 IEEE International Conference on Progress in Informatics and Computing*: 336-339.

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Department of Radiation Oncology

Segmentation of brain magnetic resonance imaging (MRI) data plays an important role in the computer-aided diagnosis and neuroscience research. Fuzzy c-means (FCM) clustering algorithm is one of the most usually used techniques for brain MRI image segmentation because of its fuzzy nature. However, the conventional FCM method fails to carry out segmentation well enough due to intensity inhomogeneity in MRI data. To overcome this issue, we propose an improved algorithm based on FCM clustering for segmentation of brain MRI data. Specifically, we modify the conventional FCM algorithm to allow for intensity inhomogeneity by introducing the regularization of the neighborhood influence and bias field. Results show that our proposed algorithm obtains reasonable segmentation of white matter (WM), gray matter (GM), and cerebrospinal fluid (CSF) from MRI data, which is superior to the expectation-maximization (EM) and conventional FCM methods. © 2016 IEEE.

Liu J, Hage N, Sugiyama N, Jovanovski A and **Madan I** (2017). "Contribution of depression and anxiety to prenatal, intrapartum, and neonatal outcomes." *Obstetrics and Gynecology* 129(Sup 1): 141S.

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Department of Pathology

Department of Obstetrics and Gynecology

INTRODUCTION: To determine independent prenatal, intrapartum, and neonatal correlates of pregnancies affected by depression and anxiety. METHODS: Of deliveries occurring in 2013-2014, depression or anxiety was present in 915 (5.1%), including those with depression alone ($n = 315$, 1.8%), anxiety alone ($n = 398$, 2.2%), and comorbid depression and anxiety ($n = 202$, 1.1%). Cases were compared to unaffected pregnancies ($n = 17,024$, 94.9%) using logistic regression. RESULTS: For depression or anxiety, independently

associated prenatal factors were unmarried status (OR 1.40), non-Hispanic white race (OR 1.89), smoking (OR 1.98), asthma (OR 1.38), epilepsy (OR 2.49), migraines (OR 3.58), and hypertension (OR 1.35). For intrapartum factors, independent associations were sedative use (OR 2.14), opioid use (OR 1.33), and insulin use (OR 2.94). For neonatal factors, independent associations were neonatal abstinence syndrome (OR 11.6), five-minute Apgar score (OR 0.83), and umbilical vein pH (OR 0.14). Individual regression analysis showed that depression had the most independent associations (n = 11), followed by anxiety (n = 9), and comorbid depression and anxiety (n = 8). Psychotropic medications were used by 280 subjects (31%). The most common were selective serotonin reuptake inhibitors (n = 224, 25%), benzodiazepines (n = 38, 4.2%), other antidepressants (n = 37, 4.0%), and antiepileptics (n = 13, 1.1%). CONCLUSION: Ethnic and social factors, substance use, and medical disorders are associated with depression and anxiety in pregnancy. A minority of women used psychotropic medications during pregnancy. There is a trend for more narcotic and sedative use with a resultant increased risk of neonatal abstinence syndrome.

LiVecchi JT, Khoshnevis M and **Nesi FA** (2017). "Managing antithrombotic agents in patients scheduled for eyelid surgery: Risk-stratification for stopping therapy should be determined by case, team of physicians." [Ophthalmology Times](#) 42(8): 19-26.

[Full-Text](#)

Department of Ophthalmology

The article identifies best practices in the management of elective blepharoplasty between patients who may or may not be on antithrombotic therapy (ATT). Topics discussed include hemorrhagic complications associated with blepharoplasty, the morbidity and mortality of systemic ischemic and embolic events, and bridging therapy during anticoagulation.

Lohani AS, **Niculescu I** and **Zarouk S** (2017). "Pancreatic adenocarcinoma mimicking granulomatosis with polyangitis." [American Journal of Kidney Diseases](#) 69(4): A64.

[Full-Text](#)

Department of Internal Medicine

Losso MJ, Friedman P and **Whitten A** (2017). "Maternal factors and neonatal morbidity associated with opioid use in pregnancy." [Obstetrics and Gynecology](#) 129(Sup 1): 131S.

[Request Form](#)

OUWB Medical Student Author

Department of Obstetrics and Gynecology

INTRODUCTION: To identify the maternal factors and neonatal outcomes associated with opioid use in pregnancy. METHODS: This is a retrospective study of 16,980 term, singleton deliveries in a single hospital system from 2013-2014. Cases of opioid use during pregnancy (n = 1,648) were compared to unaffected pregnancies (n = 15,332) via logistic regression. RESULTS: In terms of maternal factors, opioid use was associated with black race (OR 2.78), gestational age greater than or equal to 41 weeks (OR 1.25), smoking (OR 1.66), history of drug use (OR 1.59), and history of any psychiatric disorder (OR 1.38). Multiparity was protective against opioid use (OR 0.48). For intrapartum factors, opioid use was associated with induction of labor (OR 2.42), use of antihypertensive medications (OR 1.79), severe perineal lacerations (OR 1.59), chorioamnionitis (OR 2.29), postpartum hemorrhage (OR 3.02), and operative or wound complications (OR 4.85). For neonatal outcomes, opioid use was associated with abstinence syndrome (OR 5.17), major birth defects (OR 2.65), and umbilical arterial pH less than 7.0 (OR 2.65). CONCLUSION: There are distinct demographic, social, medical, and obstetrical correlates of opioid use in pregnancy. Major maternal adverse associations include operative and wound complications and postpartum hemorrhage, while major neonatal adverse associations include abstinence syndrome and decreased umbilical arterial pH.

Maerz T, Newton M, Gawronski K, Remer L, **Baker KC**, Coustry F, Hecht J and Posey K (2017). "Increased joint laxity and altered bone and cartilage morphology in a mutant Cartilage Oligomeric Matrix Protein (COMP) mouse model of pseudoachondroplasia." *Journal of Orthopaedic Research* 35(Sup): No.0245.

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Department of Orthopedic Surgery

INTRODUCTION: Cartilage oligomeric matrix protein (COMP) is an extracellular matrix (ECM) protein critical to the growth, development, and maintenance of cartilage, bone, and other musculoskeletal tissues. Pseudoachondroplasia (PSACH) is a severe dwarfing pathology caused by mutations in the COMP gene. Mutations in COMP result in abnormal protein folding, aberrant protein trafficking, and accumulation in the endoplasmic reticulum (ER). These cellular processes trigger the unfolded protein response (UPR), and, ultimately, COMP retention leads to premature chondrocyte death, abnormal growth plate function and, thus, impaired bone and cartilage development leading to dwarfism. Our group has previously developed an inducible mouse model able to recapitulate the PSACH phenotype by expressing human mutant COMP. In this model, endoplasmic reticulum stress, oxidative stress, DNA damage and inflammation contribute to premature chondrocyte death by necroptosis. The extent of downstream changes in trabecular and cortical bone morphometry as well as articular cartilage morphology in this model, however, remain undescribed. Furthermore, it is unknown whether mutations in the COMP gene manifest in increased joint laxity. As such, the purpose of this study was to quantify femoral epiphyseal and metaphyseal trabecular bone morphometry, femoral cortical bone morphometry, femoral articular cartilage morphology, and knee joint laxity in an inducible mouse model of pseudoachondroplasia. **METHODS:** All animal studies were approved by our institution's Animal Welfare Committee. The bigenic mutant D469del-COMP mice were generated by introducing plasmid DNA: pTRE-COMP and pTET-On-Col II. Standard breeding was used to generate bigenic animals. Expression of mutant (MT)-COMP in mice was induced by administering doxycycline (DOX) (500 ng/ml) through drinking water (+ 5% sucrose) pre- and postnatally. All mice are in C57BL/6 background. Male mice were collected at 16 weeks of age (n=6 per group). Quantitative joint laxity testing was performed as previously described in both mice and rats. The whole left limb was disarticulated at the hip joint, and skin and muscle were removed. The femur and tibia were potted in Bondo resin, and limbs were rigidly mounted in custom loading fixtures on a materials testing system (Insight 5, MTS, Eden Prairie, MN). To measure anterior-posterior (A-P) laxity, the knee joint was flexed to 60°, and the tibia was A-P translated in a fixture allowing for only inferior/superior translation and internal/external rotation (3 degrees of freedom). Following preconditioning, the tibia was subjected to 20 cycles of A-P translation of ± 0.5 mm. A-P laxity was calculated by adding the anterior and posterior translations required to reach 0.5 N from the initial load at zero deflection in both directions. To measure varus-valgus (V-V) laxity, the knee joint was mounted laterally in 15° of flexion and the femur was rigidly fixed. V-V joint angulation was induced by applying positive/negative displacement to the tibia via a 1.0 mm guide pin drilled into the tibial pot 15mm distal to the tibial tubercle, facilitating smooth arc motion. Following preconditioning, 20 cycles of ± 1.0 mm were applied. V-V laxity was calculated by adding the anterior and posterior translations required to reach 75 mN from the initial load at zero deflection in both directions. To assess trabecular morphometry, the distal femoral epiphysis and metaphysis were imaged using micro-computer tomography (μCT) (μCT-40, Scanco Medical, Bruettisellen, Switzerland) at 55 kVp, 114 μA, 250 ms integration time, with an isotropic voxel size of 8.0 μm. To assess diaphyseal cortical morphometry, the femoral midshaft was imaged using the same parameters with a 12 μm voxel size. To assess articular cartilage (AC) morphology, specimens were immersed in 15% ioxaglate, an anionic contrast agent, and imaged using μCT with a 6.0 μm voxel. Articular cartilage was manually segmented and analyzed using mean cartilage thickness and surface roughness, as previously shown. Differences in all parameters between WT and COMP mice were assessed using t-tests. **RESULTS SECTION:** COMP mice exhibited significantly increased A-P laxity (COMP: 0.605 mm ± 0.04, WT: 0.417 mm ± 0.08, P < 0.001) and significantly increased V-V laxity (COMP: 1.16 mm ± 0.38, WT: 0.518 mm ± 0.09, P = 0.002) with correspondingly lower A-P and V-V stiffness. Abnormal growth plate and primary spongiosa morphology is evident in COMP mice, and globally reduced bone volume was observed at diaphyseal, metaphyseal, and epiphyseal sites (Fig. 1). COMP mice exhibited significantly lower cortical thickness (COMP: 216 μm ± 8.7, WT: 242 μm ± 17, P = 0.016), lower metaphyseal BV/TV (COMP: 11.5% ± 4.9, WT: 21.5% ± 1.2, P < 0.001), BMD (COMP: 1147 HU ± 310, WT: 1768 HU ± 76, P < 0.001), Tb.Th. (COMP: 50.3 μm ± 7.3, WT:

59.9 $\mu\text{m} \pm 4.6$, $P = 0.021$), Tb.N (COMP: 2.23 ± 0.6 , WT: 3.59 ± 0.16 , $P < 0.001$) and increased metaphyseal Tb.Sp (COMP: $218 \mu\text{m} \pm 16$, WT: $178 \mu\text{m} \pm 4$, $P < 0.001$) and SMI (COMP: 4.30 ± 0.84 , WT: 3.32 ± 0.31 , $P = 0.023$). Similar findings were observed in epiphyseal trabecular bone, with markedly decreased BV/TV ($P < 0.001$), TMD ($P = 0.004$), BMD ($P < 0.001$), Tb.Th. ($P = 0.010$), and increased Tb.Sp ($P = 0.021$) and SMI ($P = 0.001$), but no difference in Tb.N ($P = 0.802$). Furthermore, COMP mice exhibited significantly thinner femoral AC thickness (COMP: $30.9 \mu\text{m} \pm 3.6$, WT: $36.9 \mu\text{m} \pm 4.9$, $P = 0.038$), most notably on the trochlea (Fig. 2), but no significant difference in AC surface roughness (COMP: $10.6 \mu\text{m} \pm 2.2$, WT: $14.4 \mu\text{m} \pm 3.2$, $P = 0.055$). Lastly, COMP mice had significantly lower subchondral bone thickness in the medial femoral condyle (COMP: $75.9 \mu\text{m} \pm 3.2$, WT: $79.5 \mu\text{m} \pm 1.7$, $P = 0.030$), but not globally (COMP: $75.7 \mu\text{m} \pm 2.1$, WT: $77.0 \mu\text{m} \pm 1.2$, $P = 0.251$). DISCUSSION: PSACH is a debilitating dwarfing condition characterized by a myriad of musculoskeletal tissue insufficiencies. The present study demonstrates that our group's inducible mouse model expressing human mutant COMP exhibits markedly increased knee joint laxity, globally reduced bone volume, and thinner articular cartilage as compared to the WT phenotype. These data demonstrate the impact of COMP mutation on downstream tissue properties. Further work may characterize differences in intrinsic mechanical properties and develop anabolic treatment strategies. (Figure Presented).

Maerz T, Newton MD, Fleischer M, Hartner SE and **Baker KC** (2017). "Acute changes in articular cartilage morphology correspond with subchondral and epiphyseal bone remodeling following anterior cruciate Ligament Rupture." Journal of Orthopaedic Research 35(Sup 1): No. 1511.

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Department of Orthopedic Surgery

INTRODUCTION: The long-term incidence of post-traumatic osteoarthritis (PTOA) following anterior cruciate ligament (ACL) rupture has been reported as high as 50 " 80%. Recent clinical literature has demonstrated changes in articular cartilage (AC) morphology as early as one year post-injury, and both AC thinning and thickening have been observed. Preclinical models of ACL injury have demonstrated subchondral bone and epiphyseal trabecular bone remodeling, as well as hypertrophic thickening and degenerative thinning of AC at intermediate to chronic time points, but it is unknown to what extent these phenomena occur in the acute time frame immediately after injury. Furthermore, it is unknown whether bone and cartilage changes concurrently or whether one precedes the other. The purpose of this study was to quantify subchondral and epiphyseal trabecular bone remodeling using both in vivo μCT and near-infrared (NIR) fluorescence imaging and to quantify changes in articular cartilage morphology using contrast-enhanced μCT acutely after ACL rupture in a preclinical rat model. METHODS: Under IACUC approval, female Lewis rats were randomized to either noninvasive ACL rupture (ACLR) or Sham ($n=6/\text{group}$). Isolated ACL rupture was induced by rapid compressive load applied to the tibia while the knee is flexed to 100° . The sham procedure consisted of preload and preconditioning cycles only. Femoral bone remodeling was assessed longitudinally via in vivo micro-computed tomography (μCT) imaging of both limbs at 3, 7, 10, and 14 days post-procedure (55 kVp, $15.6 \mu\text{m}$ voxel, Viva80, Scanco Medical). Epiphyseal trabecular bone morphometry was assessed via bone volume fraction (BV/TV), tissue mineral density (TMD), bone mineral density (BMD), trabecular thickness (Tb.Th), trabecular spacing (Tb.Sp), and trabecular number (Tb.N). Subchondral bone was assessed via subchondral bone thickness (SCB.Th), TMD, and BV/TV. Bone metabolism was also quantified via in vivo near-infrared (NIR) fluorescent optical imaging. BoneTag 800, a fluorescent dye actively incorporated into newly formed bone, was used to quantify bone formation rate at 3, 7, 10, and 14 days. Cat K 680 FAST, a fluorescent dye which is activated via cleavage by cathepsin K, was used to provide an indirect measure of osteoclast activity at 14 days only. Both agents were administered 24 hours prior to imaging via a 5 nmol tail vein injection, and NIR images of both limbs were acquired (Pearl Impulse, LiCOR). The joint was manually outlined on each image (Figure 1), and mean signal intensity was computed for each limb in arbitrary units (AU). Animals were euthanized following 14 day in vivo imaging and ex vivo, contrast-enhanced μCT was performed to image femoral AC. AC volumes were processed to generate 2D AC thickness maps (Figure 3) as previously described¹. Mean AC thickness and surface roughness were quantified from AC thickness maps. Specimens were fixed and processed for decalcified, Safranin-O stained histology. RESULTS: Acute epiphyseal trabecular bone remodeling was observed in injured limbs compared to uninjured sham limbs. Significant decreases were observed in epiphyseal BV/TV at 3, 7 and 10 days (3d " ACLR: 0.520 ± 0.008 ,

Sham: 0.535 ± 0.006 , $P = 0.008$; 7d " ACLR: 0.522 ± 0.011 , Sham: 0.541 ± 0.012 , $P = 0.017$; 10d " ACLR: 0.502 ± 0.009 , Sham: 0.556 ± 0.001 , $P = 0.005$), TMD at 10 days (ACLR: 905 ± 7 mg HA/cm³, Sham: 927 ± 6 , $P = 0.038$), BMD at 7 and 10 days (7d " ACLR: 575 ± 11 mg HA/cm³, Sham: 599 ± 20 mm HA/cm³, $P < 0.019$, 10d " ACLR: 562 ± 9 mg HA/cm³, Sham: 615 ± 2 mg HA/cm³, $P = 0.004$), Tb.Th. at 10 days (ACLR: 0.139 ± 0.002 mm, Sham: 0.158 ± 0.002 , $P < .001$) and a significant increase was observed in Tb.Sp. at 3 and 7 days (3d " ACLR: 0.235 ± 0.010 mm, Sham: 0.219 ± 0.004 mm, $P = 0.013$; 7d " ACLR: 0.236 ± 0.011 mm, Sham: 0.220 ± 0.005 mm, $P = 0.018$). Comparing the injured limb to its contralateral, no significant differences were observed, likely due to the effects of altered gait on the contralateral limb. Analysis of 14 da epiphyseal data is ongoing. Acute subchondral bone remodeling was also observed in the injured limb. Compared to the contralateral limb, ACLR injured limbs exhibited significantly decreased medial condyle SCB.Th. (Injured: 0.160 ± 0.004 mm, Contralateral: 0.169 ± 0.006), BV/TV (Injured: 0.872 ± 0.031 , Contralateral: 0.903 ± 0.026 , $P = 0.012$), and BMD (Injured: 1022 ± 25 mm HA/cm³, Contralateral: 1041 ± 22 mm HA/cm³, $P < 0.011$), as well as increased whole femur TMD (Injured: 1060 ± 9 mg HA/cm³, Contralateral: 1046 ± 8 mg HA/cm³, $P = 0.007$) at the 14 day time point. Analysis of the Sham and 3, 7, and 10 day ACLR subchondral data is ongoing. ACL rupture also resulted in altered bone formation rates in the injured limb (Figure 1, 2). In the ACLR group, the injured limb had significantly lower BoneTag signal at 3, 7, and 10 days compared to contralateral, whereas no differences were observed in the Sham group (Figure 2). Normalizing injured/uninjured limb to contralateral, ACLR exhibited a significant decrease in signal at 3, 7, and 10 days compared to Sham (3d " ACLR: -0.086 ± 0.055 , Sham: 0.016 ± 0.031 , $P = 0.006$; 7d " ACLR: -0.097 ± 0.069 , Sham: 0.018 ± 0.038 , $P = 0.013$; 10d " ACLR: -0.160 ± 0.052 , Sham: 0.037 ± 0.013 , $P = 0.015$). Analysis of 14 day NIR data, including Cat K 680 FAST, is ongoing. Concurrent with observed bony changes, acute morphological changes were also observed in AC at 14 days. Compared with contralateral limbs, injured limbs exhibit adjacent zones of drastic thickening and thinning on the medial femoral condyle, and global thickening of trochlear cartilage (Figure 3). Numerically, injured ACLR cartilage exhibited significantly increased medial femoral condyle surface roughness (Injured: 0.036 ± 0.005 mm, Contralateral: 0.018 ± 0.002 , $P = 0.048$), trochlear mean thickness (Injured: 0.114 ± 0.018 mm, Contralateral: 0.083 ± 0.021 mm, $P = 0.012$) compared to its contralateral limb. Analysis of AC for the Sham group is ongoing. Histological analyses are ongoing. DISCUSSION: This study demonstrates that remodeling of both AC and bone occur concurrently in the acute time frame after ACL rupture. Although AC thinning is generally identified as a chronic, end-stage phenomenon, this data demonstrates that both AC thickening and thinning present acutely after injury. Subchondral bone thinning and volumetric epiphyseal bone loss were noted on μ CT and corroborated by reduced BoneTag signal (i.e. reduced bone anabolism), indicating that remodeling of AC and bone take place in a similar timeframe. A more thorough understanding of acute tissue changes can help identify biological mechanisms and potential therapeutic targets for treating PTOA. (Figure Presented).

May C, Jovanovski A and **Ogunyemi D** (2017). "Maternal and neonatal outcomes of African-American women in a suburban community setting." *Obstetrics and Gynecology* 129(Sup 1): 130S.

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Department of Obstetrics and Gynecology

INTRODUCTION: To evaluate the maternal and neonatal outcomes of African-American women delivering in a suburban community setting. METHODS: This is a retrospective study of 16,980 term, singleton deliveries from a single hospital system from 2013-2014. Obstetrical data was extracted from the electronic record, and obstetrical factors for African-American women (1625, 9.6%) were compared to non-African-American women, the majority of whom were Caucasian. For factors that were significant on univariate analysis, independent associations were ascertained using logistic regression. RESULTS: Compared to a primarily Caucasian suburban population, African-American women were more likely to be unmarried (OR 4.49), use opioids (OR 2.81), have a history of drug use (OR 5.26), and have class II obesity (OR 2.21). They were less likely to be current smokers (OR 0.11) and to use psychiatric medications during pregnancy (OR 0.28). Babies born to African-American mothers were more likely to have meconium staining (OR 1.52), umbilical arterial pH less than 7.0 (OR 4.32), and length of stay greater than 5 days (OR 1.24). All other factors showed no statistically significant association. CONCLUSION: Despite key demographic and historical differences, African-Americans delivering in a suburban community setting had similar maternal and neonatal outcomes

to the comparison population. The greatest adverse association was with umbilical arterial pH less than 7.0, although the absolute number of cases was small (n = 8).

May T, Comeau R, Sun P, Kotsopoulos J, Narod SA, **Rosen B** and Ghatage P (2017). "Comparison of survival outcomes in advanced serous ovarian cancer patients treated with primary debulking surgery versus neoadjuvant chemotherapy." International Journal of Gynecological Cancer 27(4): 668-674.

[Full-Text](#)

Department of Obstetrics and Gynecology

Objective: The management of women with advanced-stage serous ovarian cancer includes a combination of surgery and chemotherapy. The choice of treatment with primary debulking surgery or neoadjuvant chemotherapy varies by institution. The objective of this study was to report 5-year survival outcomes for ovarian cancer patients treated at a single institution with primary debulking surgery or neoadjuvant chemotherapy. Methods: This study included a retrospective chart review of 303 patients with stage IIIc or IV serous ovarian carcinoma diagnosed in Calgary, Canada. The patients were categorized into 1 of the 2 treatment arms: primary debulking surgery or neoadjuvant chemotherapy. The 5-year ovarian cancer-specific survival rates were estimated using Kaplan-Meier curves. Results: Among the 303 eligible patients, 142 patients (47%) underwent primary debulking surgery, and 161 patients (53%) were treated with neoadjuvant chemotherapy. Five-year survival was better for patients undergoing primary debulking surgery (39%) than for patients who received neoadjuvant chemotherapy (27%; P = 0.02). Women with no residual disease experienced better overall survival than those with any residual disease (47% vs. 26%, respectively; P = 0.0002). This difference was significant for those who had primary debulking surgery (P = 0.0004) but not for the patients who received neoadjuvant chemotherapy (P = 0.09). Women who received intraperitoneal chemotherapy had better overall survival as compared with patients who received intravenous chemotherapy (44% vs 30%, respectively; P = 0.002). Conclusions: Our findings suggest that among women with no residual disease, survival is better among those who undergo primary debulking surgery than treatment with neoadjuvant chemotherapy. The latter should be reserved for women who are deemed not to be candidates for primary debulking surgery.

Meka SG, Alsharekh E and **Chittick P** (2017). "A grapefruit sized cyst weighing on the heart." American Journal of Respiratory and Critical Care Medicine 195(Sup): A6038.

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Department of Internal Medicine

Meka SG, Qu L, **Sims M** and **Dalal B** (2017). "Venous thromboembolism is an independent risk for higher morbidity and mortality in critically ill patients with respiratory viral infection." American Journal of Respiratory and Critical Care Medicine 195(Sup): A6060.

[Request Form](#)

Department of Internal Medicine

Meka SG, Shelden D, Mertens A, **Christensen P** and Patel M (2017). "A hol(e)y predicament." Respirology Case Reports 5(4): 1-3.

[Full-Text](#)

Department of Internal Medicine

Endocardial cushion defects are congenital abnormalities that result in valvular dysfunction as well as defects (or holes) in the septa of the heart. They are typically diagnosed in early infancy; presentation late in life is rare. We present the case of a 72-year-old female admitted to the hospital with dyspnoea and palpitations. She was found to have multifocal atrial tachycardia. She suffered cardiac arrest associated with refractory hypoxaemia that required mechanical ventilation and vasodilator therapy with inhaled nitric oxide. Echocardiography revealed a large ostium primum atrial septal defect (ASD) complicated by Eisenmenger syndrome. It is likely that her arrhythmia, a sequela from her long-standing congenital abnormality, led to sudden decompensation. In this case presentation, we review the aetiology, presentation, and complications of ASDs.

Mells AJ, Gosey GM and Muldoon MP (2017). "Intra-articular lipoma of the hip." BMJ Case Reports 2017(2017): Article No. bcr-2017-220349.

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OUWB Medical Student Author

Intra-articular lipoma of the hip is a rare entity, with only two reports published in the English-language literature. We present a case of successful arthroscopic resection of an intra-articular peripheral compartment lipoma in a 69-year-old woman with a coincident labral tear. This woman presented with left hip pain that developed gradually over 2 years and increased over 2 months. MRI showed a fat-intense mass in the anterior aspect of the hip joint, convincing for intra-articular lipoma. Physical examination in the operating room reproduced decreased range of motion and evidence of impingement but with a soft endpoint. Arthroscopy revealed an anterior intrasubstance labral tear, which was debrided. The mass was excised and confirmed as true lipoma on histology. The soft endpoint on examination illustrates that a large lipoma of the hip joint can cause clinical symptoms of impingement in the absence of bony abnormality or trauma.

Meyer B, Sasso R, Yeung C, Bae H, Rhyne A, Franke J, Vajkoczy P, De Palma M and **Fischgrund J** (2017). "Treatment of chronic low back pain via ablation of the basivertebral nerve: Results of a multicenter, randomized, double blinded, sham controlled trial (smart trial)." Global Spine Journal 7(2): 110S-111S.

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Department of Orthopedic Surgery

Introduction: The basivertebral nerve (BVN) is a sensory nerve within the vertebral body, whose role in pain transmission is thought to be a source of chronic low back pain associated with degenerative vertebral bodies and endplates. The safety and efficacy of a novel intraosseous bipolar radiofrequency system (INTRACEPT™) for ablation of the BVN was evaluated in this trial. **Material and Methods:** 225 patients with chronic low back pain refractory to >6 months of conservative care were enrolled at 18 sites in the United States and Germany in this prospective, double blinded, randomized, sham controlled trial (147 active vs 78 sham arm). MRI had to demonstrate Type 1 or 2 Modic changes at <3 contiguous vertebral bodies. Follow-up was at 2 and 6 weeks, 3, 6, and 12 months. Patients and physicians providing postoperative care were blinded to allocation until the conclusion of the one year follow-up. For Sham patients, there was an optional crossover component after all 12-month evaluations were performed. **Results:** Targeting success according to postoperative MRI was achieved in 96.4% of vertebral bodies or 129 of 145 patients treated (89.0%). Primary end point analysis in the per protocol population at 3 months showed that the ODI improvement in the active arm was superior to the sham arm ($P = .019$) with a mean improvement of 20.5 points Sham 15.2 points). This result was sustained through one year of follow-up. Furthermore, an analysis of ODI responder rates found that 75.6% of patients treated with BVN ablation (vs 55.2% of the Sham patients) demonstrated a greater than 10-point, clinically meaningful improvement in their low back pain and associated disability at 3 months. There were no adverse device effects and no device related serious adverse events. The rates of neurological events reported were low and comparable between treatment arms. MRI evaluations at the 6-week and 6-month follow-up time points found no evidence of any spinal cord abnormalities, avascular necrosis or accelerated disc degeneration. **Conclusion:** Ablation of the BVN using a bipolar RF System is safe and effective for the treatment of CLBP, since the analysis of the primary study end point showed a significantly greater improvement in ODI for the investigational arm over the Sham arm in the PP population. The surprisingly high response rate in the Sham population does not invalidate the conclusion, that BVN ablation may provide a new, minimally invasive, treatment option for a subset of patients with chronic low back pain.

Mi MS and Zhang YT (2017). "Culturally competent library services and related factors among health sciences librarians: An exploratory study." Journal of the Medical Library Association 105(2): 132-139.

[Full-Text](#)

Medical Library

Objective: This study investigated the current state of health sciences libraries' provision of culturally competent services to support health professions education and patient care and examined factors associated with cultural competency in relation to library services and professional development. Methods: This was a cross-sectional study. Data were collected with a survey questionnaire that was distributed via SurveyMonkey to several health sciences librarian email discussion lists. Results: Out of 176 respondents, 163 reported serving clients from diverse cultural backgrounds. Various services were provided to develop or support initiatives in cultural competency in health professions education and patient care. A considerable number of respondents were unsure or reported no library services to support initiatives in cultural competency, although a majority of respondents perceived the importance of providing culturally competent library services (156, 89.1%) and cultural competency for health sciences librarians (162, 93.1%). Those who self-identified as nonwhites perceived culturally competent services to be more important than whites ($p=0.04$). Those who spoke another language in addition to English had higher self-rated cultural competency ($p=0.01$) than those who only spoke English. Conclusions: These findings contribute to our knowledge of the types of library services provided to support cultural competency initiatives and of health sciences librarians' perceived importance in providing culturally competent library services and cultural competency for health sciences librarians. The results suggest implications for health sciences libraries in fostering professional development in cultural competency and in providing culturally competent services to increase library use by people from a wide range of cultures and backgrounds.

Micale M, Embrey B, Hubbell K, Beaudry-Rogers K and **Whitten A** (2017). "Partial trisomy 9: Prenatal diagnosis and recurrence within same family." Clinical Case Reports 5(6): 993-999.

[Full-Text](#)

Department of Pathology

Department of Obstetrics and Gynecology

Key Clinical Message Trisomy 9 can be suspected and confirmed in the prenatal period since the 11-13.6 weeks of screening. In cases of partial trisomy 9, the diagnosis is important especially to counseling the couple due to the increased likelihood of recurrence in subsequent pregnancies.

Micale M, Embrey B, Hubbell K, Beaudry-Rogers K and **Whitten A** (2017). "Prenatal identification of two discontinuous maternally inherited chromosome 7q36.3 microduplications totaling 507 kb including the sonic hedgehog gene in a fetus with multiple congenital anomalies." Clinical Case Reports 5(6): 993-999.

[Full-Text](#)

Department of Pathology

Department of Obstetrics and Gynecology

Duplications of the SHH gene, an important developmental gene, are rare. Disruption of this gene produces a variable phenotype in humans from major anomalies to isolated facial defects. This is the first reported case of a maternally inherited 507 kb discontinuous chromosome 7q36.3 microduplication resulting in duplication of SHH and nearby enhancer sequences.

Mopuru H, **Pullalarevu R**, **Tantisattamo E**, **Bedi D**, **Cohn S**, **Koffron A** and **Samarapungavan D** (2017). "Azathioprine-induced sweet's syndrome in a kidney transplant recipient: Sweet is not good all the time." American Journal of Kidney Diseases 69(4): A68.

[Full-Text](#)

Department of Internal Medicine

Department of Surgery

Nagle EF, Sanders ME, Gibbs BB, **Franklin BA**, Nagle JA, Prins PJ, Johnson CD and Robertson RJ (2017). "Reliability and accuracy of a standardized shallow water running test to determine cardiorespiratory fitness." Journal of Strength and Conditioning Research 31(6): 1669-1677.

[Full-Text](#)

Department of Internal Medicine

A standardized fitness assessment is critical for the development of an individualized exercise prescription. Although the benefits of aquatic exercise have been well established, there remains the need for a standardized nonswimming protocol to accurately assess cardiorespiratory fitness (CRF) in shallow water. The present investigation was designed to assess (a) the reliability of a standardized shallow water run (SWR) test of CRF and (b) the accuracy of a standardized SWR compared with a land-based treadmill (LTM) test. Twenty-three healthy women (20 +/- 3 years), with body mass index (23.5 +/- 3 kg.m(-2)), performed 2 shallow water peak oxygen consumption ((V) over dot O(2)peak) running tests (SWRa and SWRb), and 1 (V) over dot O-2 max LTM. Intraclass correlation coefficients indicated moderately strong reliability for (V) over dot O-2 peak (ml.kg(-1).min(-1)) (r = 0.73, p < 0.01), HRpeak (b.min(-1)) (r = 0.82; p < 0.01), and O(2)pulse (V) over dot O-2 [ml.kg(-1).min(-1)]. HR [b.min(-1)] (r = 0.77, p < 0.01). Using paired t-tests and Pearson's correlations, SWR (V) over dot O(2)peak and HRpeak were significantly lower than during LTM (p <= 0.05) and showed moderate correlations of 0.60 and 0.58 (p < 0.001) to LTM. O(2)pulse was similar (p > 0.05) for the SWR and LTM tests with a moderate correlation of 0.63. A standardized SWR test as a measure of CRF is a reliable, and to some degree, valid alternative to conventional protocols and may be used by strength and conditioning professionals to measure program outcomes and monitor training progress. Furthermore, this protocol provides a water-based option for CRF assessment among healthy women and offers insight toward the development of an effective protocol that can accommodate individuals with limited mobility, or those seeking less musculoskeletal impact from traditional land-based types of training.

Nair GB and Niederman MS (2017). "Using ventilator-associated pneumonia rates as a health care quality indicator: A contentious concept." Seminars in Respiratory and Critical Care Medicine 38(3): 237-244.

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Department of Internal Medicine

Pneumonia is a leading cause of hospital-acquired infections, although reported rates of ventilator-associated pneumonia (VAP) have been declining in recent years. A multifaceted infection prevention approach, using a "ventilator bundle," has been shown to reduce the frequency of VAP, while improving other patient outcomes. Because of difficulties in defining VAP, the Center for Medicare and Medicaid Service introduced a new streamlined ventilator-associated event (VAE) definition in 2013 for the surveillance of complications in mechanically ventilated patients. VAE measures are increasingly being measured by institutions in the United States in place of VAP rates and as a potential measure of the quality of intensive care unit (ICU) care. However, there is increased recognition that the streamlined definitions identify a different subset of patients than those identified by traditional VAP surveillance and that VAP prevention strategies may not impact all the causes of VAE. Also, VAP and VAE rates may not always reflect the quality of care in a given ICU, especially since patient factors, beyond the control of the hospital, may impact the rates of VAP and VAE. In this review, we discuss the issues related to VAP as a quality measure and the areas of uncertainty related to the new VAE definitions.

Nakanishi R, Baskaran L, Gransar H, Budoff MJ, Achenbach S, Al-Mallah M, Cademartiri F, Callister TQ, Chang HJ, **Chinnaiyan K**, Chow BJW, De Lago A, Hadamitzky M, Hausleiter J, Cury R, Feuchtner G, Kim YJ, Leipsic J, Kaufmann PA, Maffei E, **Raff G**, Shaw LJ, Villines TC, Dunning A, Marques H, Pontone G, Andreini D, Rubinshtein R, Bax J, Jones E, Hindoyan N, Gomez M, Lin FY, Min JK and Berman DS (2017). "Relationship of hypertension to coronary atherosclerosis and cardiac events in patients with coronary computed tomographic angiography." Hypertension 70(2): 293-299.

[Full-Text](#)

Department of Internal Medicine

Hypertension is an atherosclerosis factor and is associated with cardiovascular risk. We investigated the relationship between hypertension and the presence, extent, and severity of coronary atherosclerosis in

coronary computed tomographic angiography and cardiac events risk. Of 17181 patients enrolled in the CONFIRM registry (Coronary CT Angiography Evaluation for Clinical Outcomes: An International Multicenter Registry) who underwent 64-detector row coronary computed tomographic angiography, we identified 14 803 patients without known coronary artery disease. Of these, 1434 hypertensive patients were matched to 1434 patients without hypertension. Major adverse cardiac events risk of hypertension and non-hypertensive patients was evaluated with Cox proportional hazards models. The prognostic associations between hypertension and no-hypertension with increasing degree of coronary stenosis severity (nonobstructive or obstructive =50%) and extent of coronary artery disease (segment involvement score of 1-5, >5) was also assessed. Hypertension patients less commonly had no coronary atherosclerosis and more commonly had nonobstructive and 1-, 2-, and 3-vessel disease than the no-hypertension group. During a mean follow-up of 5.2±1.2 years, 180 patients experienced cardiac events, with 104 (2.0%) occurring in the hypertension group and 76 (1.5%) occurring in the no-hypertension group (hazard ratios, 1.4; 95% confidence intervals, 1.0-1.9). Compared with no-hypertension patients without coronary atherosclerosis, hypertension patients with no coronary atherosclerosis and obstructive coronary disease tended to have higher risk of cardiac events. Similar trends were observed with respect to extent of coronary artery disease. Compared with no-hypertension patients, hypertensive patients have increased presence, extent, and severity of coronary atherosclerosis and tend to have an increase in major adverse cardiac events. © 2017 American Heart Association, Inc.

Newton MD, Hartner SE, Gawronski K, Davenport E, Timmons S, **Baker KC** and Maerz T (2017). "Nondestructive assessment of the biomechanical properties of the intervertebral disc using both cationic and anionic contrast-enhanced μ ct." *Journal of Orthopaedic Research* 35(Sup 1): No. 0184.

[Full-Text](#)

Department of Orthopedic Surgery

INTRODUCTION: High resolution imaging sensitive to molecular, morphological, and mechanical changes of the intervertebral disc (IVD) is an important characterization tool in preclinical animal models. Recently, our group has demonstrated that contrast-enhanced (CE)- μ CT is sensitive to in vivo degeneration in a rabbit IVD model. Furthermore, we have demonstrated the use of both cationic and anionic contrast agents for nondestructive, in vitro assessment of morphology and glycosaminoglycan (GAG) content and distribution of the rat IVD. In addition to changes in morphology and molecular composition, a hallmark characteristic of degenerate IVDs is diminished mechanical properties, which, in turn, is a consequence of diminished GAG and collagen content. Typically, determination of biomechanical properties of the IVD relies on destructive, in vitro testing methodology. However, as the biomechanical properties of the IVD are highly dependent on GAG content, quantitative imaging techniques sensitive to GAG content could be employed to assess biomechanical properties in a nondestructive manner. To this end, the objective of this study was to assess the use of contrast-enhanced μ CT for nondestructive biomechanical assessment of the IVD using both cationic and anionic contrast agents. **METHODS:** L3/L4 motion segments were dissected from the lumbar spines of skeletally-mature female Lewis rats aged 14-18 weeks ($\hat{\approx}$ 200 - 220 g). Motion segments were incubated for 24 hours at 37°C in a 0 or 5 units/mL papain solution to induce enzymatic GAG digestion, followed by incubation for 24 hours in either 40% Hexabrix (anionic) or 30 mg I/mL CA4+ (cationic) (n=6 per digest group per contrast agent). Contrast-enhanced μ CT imaging of each IVD was performed at 55 kVp, 145 μ A, 250 ms integration time, yielding an isotropic 20 μ m voxel size (μ CT-40, Scanco Medical). Central axial slices of each IVD were manually outlined using a custom MATLAB program to calculate IVD attenuation and cross-sectional area (CSA). IVD heights were obtained by manually delineating the vertebral endplate borders and calculating the average distance between endplates at consistent anatomic locations. Following imaging, each motion segment was rigidly mounted between two platens on a materials testing system equipped with a 250 N load cell (Insight 5, MTS). During testing, specimens were fully immersed in room temperature phosphate-buffered saline (PBS, pH = 7.4). Following a 30 min preload of 1 N, motion segments underwent 20 compression/tension loading cycles from 4.5 N to -3 N at 0.1 Hz. The 20th tension-compression cycle was used for analysis (Figure 1C). Load and extension values were converted to stress and strain using CSA and IVD height. Compressive modulus was defined as the slope of the linear compressive region of the stress/strain curve, which was located semi-automatically using MATLAB. To quantify GAG

content, IVDs were meticulously dissected from their endplates under microscopy, lyophilized, weighed, and assayed using the dimethylmethylene blue (DMMB) assay. A standard curve of chondroitin sulfate (CS) was used to calculate total GAG content, which was normalized to the dry weight (DW) of each IVD and expressed in $\mu\text{g CS/mg DW}$. T-tests were used to assess differences between digestion groups, and Pearson's correlations were used to assess the relationships between compressive modulus, IVD attenuation, and GAG content. RESULTS: There were no differences in CSA or height between IVDs in the Hexabrix and CA4+ groups, nor between undigested and digested samples within each group. Enzymatic digestion induced significant decreases in IVD compressive modulus in both the Hexabrix group and CA4+ group, and corresponding significant decreases in normalized GAG content were measured (Table 1). As expected, alterations in GAG content caused significant changes in the contrast-enhanced μCT attenuation profile of IVDs: in the Hexabrix group, a $\sim 38\%$ increase in whole IVD attenuation and a $\sim 34\%$ increase in NP attenuation were observed; in the CA4+ group, a $\sim 27\%$ decrease in whole IVD attenuation and a $\sim 29\%$ decrease in NP attenuation were observed (Table 1, Figure 1). Compressive modulus was highly correlated to both whole-IVD attenuation and NP attenuation in the Hexabrix group ($r = -0.879$, $P < 0.001$; $r = -0.913$, $P < 0.001$, respectively) and in the CA4+ group ($r = 0.904$, $P < 0.001$; $r = 0.910$, $P < 0.001$, respectively) (Figure 1). Similarly-strong correlations were observed between compressive stiffness and both whole-IVD attenuation and NP attenuation in the Hexabrix group ($r = -0.845$, $P < 0.001$; $r = -0.877$, $P < 0.001$, respectively) and in the CA4+ group ($r = 0.902$, $P < 0.001$; $r = 0.914$, $P < 0.001$, respectively). Furthermore, compressive modulus and stiffness were highly correlated to IVD GAG content in both groups: Hexabrix ($r = 0.878$, $P < 0.001$; $r = 0.835$, $P = 0.001$, respectively), CA4+ ($r = 0.911$, $P < 0.001$; $r = 0.909$, $P < 0.001$, respectively). DISCUSSION: Nondestructive assessment of the morphological, biochemical, and biomechanical properties of the IVD using CE- μCT provides a powerful research tool to augment existing methodologies such as histology. Results from the present study demonstrate that both cationic and anionic CE- μCT can both be employed for non-destructive, indirect assessment of compressive modulus and stiffness due to its high degree of sensitivity to GAG content. Correlation analysis indicated highly significant, strong linear correlations between mechanical properties and IVD attenuation using both anionic and cationic contrast agents. These correlations demonstrate that IVD attenuation accounts for a high proportion (88-91%) of variation in the compressive properties of the IVD, and CE- μCT can be employed to draw conclusions about the compressive properties of the IVD in the absence of a mechanical test. (Figuer Presented).

Newton MD, Hartner SE, Timmons S, Delaney ND, Pirrone MG, **Baker KC** and Maerz T (2017). "Contrast-enhanced microCT of the intervertebral disc: A comparison of anionic and cationic contrast agents for biochemical and morphological characterization." *Journal of Orthopaedic Research* 35(5): 1067-1075.

[Full-Text](#)

Department of Orthopedic Surgery

The objective of this study was to quantify and compare the contrast-enhancing properties of the anionic contrast agent ioxaglate/Hexabrix, and cationic contrast agent CA4+ for biochemical and morphological characterization of the intervertebral disc (IVD) via microCT. Optimal contrast agent concentrations were determined by incubating rat lumbar IVDs in dilutions of Hexabrix-320 (20%, 30%, 40%, and 50%) and CA4+ (10, 20, 30, and 40 mgI/mL). microCT imaging was performed at 70 kVp, 114 microA, and 250 ms integration time, 12 microm voxel size. The kinetics of contrast enhancement were quantified with cumulative incubations for 0.5, 1, 2, 12, 16, 20, and 24 hours using both agents. Agreement in morphological quantification was assessed via serial scans of the same IVDs. Correlation of attenuation to glycosaminoglycan (GAG) content was determined by enzymatic digestion of IVDs, subsequent microCT imaging, and GAG quantification via dimethylmethylene blue assay. 40% Hexabrix and 30 mgI/mL CA4+ were chosen as optimal concentrations. Hexabrix enabled greater delineation of the IVD from surrounding tissues, and CA4+ had the lowest uptake in surrounding soft tissue. 24-hour incubation was sufficient for >99% equilibration of both agents. A high level of agreement was observed in the quantification of IVD volume (ICC = 0.951, $r = 0.997$) and height (ICC = 0.947, $r = 0.991$). Both agents exhibited strong linear correlations between microCT attenuation and GAG content (Hexabrix: $r = -0.940$; CA4+ : $r = 0.887$). Both agents enable biochemical and morphological quantification of the IVD via contrast-enhanced microCT and

are effective tools for preclinical characterization. This article is protected by copyright. All rights reserved.

Novotny NM, Puentes MC, Leopold R, Ortega M and Godoy-Lenz J (2017). "The burnia: Laparoscopic sutureless inguinal hernia repair in girls." [Journal of Laparoendoscopic and Advanced Surgical Techniques](#) 27(4): 430-433.

[Request Form](#)

Department of Surgery

Introduction: Laparoscopic inguinal hernia repair in children is in evolution. Multiple methods of passing the suture around the peritoneum at the level of the internal inguinal ring exist. Cauterization of the peritoneum at the internal ring is thought to increase scarring and decrease recurrence. We have employed a sutureless, cautery only, laparoscopic single port repair of inguinal hernias and patent processus vaginalis (PPV) in girls. Methods: After institutional ethical review was obtained, a retrospective review of sutureless laparoscopic inguinal hernia repairs in girls by 4 surgeons at separate institutions was performed. Patient demographics, intraoperative findings, and postoperative outcomes were recorded and analyzed. The technique involves an umbilical 30° camera and either a separate 3 mm stab incision in the midclavicular line or a 3 mm Maryland grasper placed next to the camera, and the distal most portion of the hernia sac is grasped and pulled into the abdomen and cauterized obliterating the sac. Results: Eighty inguinal hernias were repaired using this technique in 67 girls between July 2009 and September 2015. The ages and weights ranged from 1 month to 16 years and from 2 to 69 kg, respectively. There was one conversion to open approach because an incarcerated ovary was too close to the ring. A single umbilical incision was utilized in 85%. Fifty-seven percent patients had hernias on the right whereas 42% had hernias on the left. Of the patients with presumed unilateral hernias, 22 patients were found to have PPV and were treated through the same incisions, 17/22 were found during a contralateral hernia surgery and 5/22 were found incidentally during appendectomy. Average operative time for unilateral and bilateral hernias was 22 minutes (5-38 minutes) and 31 minutes (11-65 minutes), respectively. No patient required a hospital stay because of the hernia repair. At an average of 25 months follow-up (1.6-75 months), there were no recurrences. The only complication was a single lateral port site hernia on a 2 kg, former 24 week postmenstrual age girl before adapting the technique to single-site surgery for all. Conclusions: Laparoscopic sutureless inguinal hernia repair is safe and effective in girls of all ages. The single-site modification allows for superior cosmetic result and lower complication profile. The Burnia allows for adequate treatment of unilateral and bilateral inguinal hernias with a single incision in the umbilicus.

Nyland RL and **Sawarynski KE** (2017). "Setting students up for success: A short interactive workshop designed to increase effective study habits (Peer Reviewed)." MedEdPortal Publication No. 10610

[Full-Text](#)

Department of Biomedical Sciences (OU)

Introduction: Research shows that students generally utilize ineffective learning techniques such as massed practice and rereading. We developed an interactive workshop to teach first-year medical students highly effective learning techniques. Students often believe they know what works best for themselves. To impart effective strategies, we must disprove any current ineffective strategies. During the workshop, we employ activities designed to keep students engaged and reveal flaws in common study practices. Methods: The workshop occurred during the first week of an integrated basic science course that provides a foundation for our integrated curriculum. In addition to presenting evidence supporting effective techniques, we also realized a practical aspect that needed to be addressed—the limited time available to medical students. Thus, we concluded the workshop by distilling principles into approaches they could immediately put into practice—before, during, and after lecture. Focusing on the most effective techniques made the approaches more palatable to students facing vast quantities of preparatory material. Results: A postworkshop survey requested feedback for improvement and also included a table allowing students to indicate their interest and help needed for implementing each technique. This gave our Director of Academic Success invaluable insight as she developed additional workshops for first-year students. Discussion: Although study skills workshops are commonplace, this module is distinct in that it forces students to evaluate the effectiveness of their learning strategies and provides scaffolding for adopting highly effective study techniques. Ultimately,

the goal was to educate our new students on implementing effective study techniques.

Ogunleye F, **Huang J**, Ibrahim M, Allen E, Brennan N, Yu Z, **Huben M** and **Jaiyesimi I** (2017). "BCR-ABL testing by polymerase chain reaction in patients with neutrophilia: The William Beaumont Hospital experience and the case for rational laboratory test requests reply (LETTER)." Journal of Oncology Practice 13(4): 285.

[Request Form](#)

Department of Pathology

Department of Internal Medicine

Ogunyemi D, Friedman P, Betcher K, **Whitten A**, Sugiyama N, Qu L, **Kohn A** and Paul H (2017). "Obstetrical correlates and perinatal consequences of neonatal hypoglycemia in term infants." Journal of Maternal-Fetal and Neonatal Medicine 30(11): 1372-1377.

[Request Form](#)

Department of Obstetrics and Gynecology

Department of Pediatrics

Objective: To determine independent perinatal and intrapartum factors associated with neonatal hypoglycemia. Method: Of singleton pregnancies delivered at term in 2013; 318 (3.8%) neonates diagnosed with hypoglycemia were compared to 7955 (96.2%) neonate controls with regression analysis. Results: Regression analysis showed that independent prenatal factors were multiparity (odds-ratio [OR] = 1.61), gestational age (OR = 0.68), gestational diabetes (OR = 0.22), macrosomia (OR = 4.87), small for gestational age neonate [SGA] (OR = 6.83) and admission cervical dilation (OR = 0.79). For intrapartum factors, only cesarean section (OR = 1.57) and last cervical dilation (OR = 0.92) were independently significantly associated with neonatal hypoglycemia. For biologically plausible risk factors, independent factors were cesarean section (OR = 4.18), gentamycin/clindamycin in labor (OR = 5.35), gestational age (OR = 0.59) and macrosomia (OR = 5.62). Mothers of babies with neonatal hypoglycemia had more blood loss and longer hospital stays, while neonates with hypoglycemia had worse umbilical cord gases, more neonatal hypoxic conditions, neonatal morbidities and NICU admissions. Conclusion: Diabetes was protective of neonatal hypoglycemia, which may be explained by optimum maternal glucose management; nevertheless macrosomia was independently predictive of neonatal hypoglycemia. Cesarean section and decreasing gestational age were the most consistent independent risk factors followed by treatment for chorioamnionitis and SGA. Further studies to evaluate these observations and develop preventive strategies are warranted. © 2016 Informa UK Limited, trading as Taylor & Francis Group.

Orrell K, **Vakharia P**, Hagstrom E, Brieva J, West D and Nardone B (2017). "Prevalence of chronic hepatitis (B and C) in psoriasis patients: A cross-sectional study in a large U.S. population." Journal of Investigative Dermatology 137(Sup 1): S27.

[Full-Text](#)

OUWB Medical Student Author

Osula V, **Patino G**, **Mi M** and **Gould D** (2017). "Content evaluation of a neuroscience course in an integrated system-based curriculum." Medical Science Educator 27(2017): 63-73.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

Medical Library

Otoupalova E, **Dalal B** and Renard B (2017). "Right heart thrombus in transit: a series of two cases." Critical Ultrasound Journal 9(1): 1-4.

[Full-Text](#)

Department of Internal Medicine

Right heart thrombus in transit is an increasingly recognized medical emergency with very high mortality rate. Echocardiography helps to establish the diagnosis and can differentiate between right heart thrombi

that result from atrial fibrillation and those originating from deep venous thrombosis. We present two cases of right heart thrombus in transit diagnosed with echocardiography that were managed with different approaches.

Otoupalova E, Meka SG, **Dalal B**, Jayaschandran V, **Hafez-Khayyata S** and **Nair GB** (2017). "Left versus right: Does site and timing of surgical lung biopsy for interstitial lung disease influence outcomes?" [American Journal of Respiratory and Critical Care Medicine](#) 195(Sup): A7704.

[Request Form](#)

Department of Internal Medicine

Department of Pathology

Pan X, Elliott CT, McGuinness B, Passmore P, Kehoe PG, Hölscher C, McClean PL, **Graham SF** and Green BD (2017). "Metabolomic profiling of bile acids in clinical and experimental samples of Alzheimer's disease." [Metabolites](#) 7(2): 1-12.

[Full-Text](#)

Department of Obstetrics and Gynecology

Certain endogenous bile acids have been proposed as potential therapies for ameliorating Alzheimer's disease (AD) but their role, if any, in the pathophysiology of this disease is not currently known. Given recent evidence of bile acids having protective and anti-inflammatory effects on the brain, it is important to establish how AD affects levels of endogenous bile acids. Using LC-MS/MS, this study profiled 22 bile acids in brain extracts and blood plasma from AD patients (n = 10) and age-matched control subjects (n = 10). In addition, we also profiled brain/plasma samples from APP/PS1 and WT mice (aged 6 and 12 months). In human plasma, we detected significantly lower cholic acid (CA, p = 0.03) in AD patients than age-matched control subjects. In APP/PS1 mouse plasma we detected higher CA (p = 0.05, 6 months) and lower hyodeoxycholic acid (p = 0.04, 12 months) than WT. In human brain with AD pathology (Braak stages V-VI) taurocholic acid (TCA) were significantly lower (p = 0.01) than age-matched control subjects. In APP/PS1 mice we detected higher brain lithocholic acid (p = 0.05) and lower tauromuricholic acid (TMCA; p = 0.05, 6 months). TMCA was also decreased (p = 0.002) in 12-month-old APP/PS1 mice along with 5 other acids: CA (p = 0.02), β -muricholic acid (p = 0.02), Ω -muricholic acid (p = 0.05), TCA (p = 0.04), and tauroursodeoxycholic acid (p = 0.02). The levels of bile acids are clearly disturbed during the development of AD pathology and, since some bile acids are being proposed as potential AD therapeutics, we demonstrate a method that can be used to support work to advance bile acid therapeutics.

Parsh J, Seth M, Green J, Sutton NR, Chetcuti S, **Dixon S**, Grossman PM, Khandelwal A, Dupree JM and Gurm HS (2017). "Coronary artery perforations after contemporary percutaneous coronary interventions: Evaluation of incidence, risk factors, outcomes, and predictors of mortality." [Catheterization and Cardiovascular Interventions](#) 89(6): 966-973.

[Full-Text](#)

Department of Internal Medicine

Objectives: We sought to evaluate the incidence, risk factors, in-hospital, and long-term outcomes and predictors of mortality of coronary artery perforations (CAP) in the contemporary percutaneous coronary intervention (PCI) era. **Background:** CAP is a rare but serious complication of PCI associated with increased risk of morbidity and mortality. **Methods:** We included 181,590 procedures performed across 47 hospitals in Michigan from January 1, 2010 to December 31, 2015. Endpoints evaluated included the incidence of CAP and its association with in-hospital outcomes. Logistic regression analysis was utilized to determine independent risk factors for CAP and to examine whether the effect of CAP on mortality varied by gender. **Results:** CAP occurred in 625 (0.34%) patients. Independent predictors for CAP included older age, peripheral arterial disease, presence of left ventricular dysfunction or cardiomyopathy, lower body mass index, pre-PCI insertion of a mechanical ventricular support device, treatment of complex lesions (Type C), and treatment of chronic total occlusions, the latter of which was the strongest predictor of perforation (adjusted odds ratio (OR) 7.01, P < 0.001). After adjusting for baseline risk, the incidence of adverse outcomes remained substantially greater in patients with a perforation, with an adjusted OR estimate of 5.00 for mortality (95%

CI 3.42–7.31), 3.25 for acute kidney injury (95% CI 2.30–4.58), and 5.26 for transfusion (95% CI 4.03–6.87) (all $P < 0.001$). Perforation was associated with a higher mortality in women than men (interaction P value = 0.01). Conclusions: CAP is a rare complication but is associated with high morbidity and mortality especially in women. Further investigation is warranted to determine why women fare worse after CAP. © 2017 Wiley Periodicals, Inc.

Patricolo GE, LaVoie A, Slavin B, Richards NL, Jagow D and **Armstrong K** (2017). "Beneficial effects of guided imagery or clinical massage on the status of patients in a progressive care unit." *Critical Care Nurse* 37(1): 62-69.

[Full-Text](#)

Department of Family Medicine

BACKGROUND Patients in the progressive care unit typically experience high levels of pain and anxiety and exhibit difficulty sleeping. **OBJECTIVE** To determine whether either clinical massage or guided imagery could reduce pain and anxiety and improve sleep. **METHODS** This study included 288 inpatients on 2 floors of a progressive care unit. On 1 floor, each patient was offered daily a 15-minute complimentary clinical massage, whereas the patients on the other floor were provided access to a 30-minute guided-imagery recording. Patients were asked to rate their pain and anxiety levels immediately before and after the massage intervention or were asked whether the guided-imagery intervention was helpful for pain, anxiety, or insomnia. **RESULTS** The massage intervention showed an immediate and significant reduction in self-reported pain and anxiety ($P < .001$); likewise, a significant number of patients self-reported that guided imagery helped alleviate pain, anxiety, and insomnia ($P < .001$). **CONCLUSION** The results of this study indicate that clinical massage and guided imagery can benefit patients in the progressive care unit.

Platts-Mills TF, Nebolisa BC, Flannigan SA, Richmond NL, Domeier RM, **Swor RA**, Hendry PL, Peak DA, Rathlev NK, **Jones JS**, **Lee DC**, Jones CW and McLean SA (2017). "Post-traumatic stress disorder among older adults experiencing motor vehicle collision: A multicenter prospective cohort study." *American Journal of Geriatric Psychiatry*. ePub Ahead of Print.

[Full-Text](#)

Department of Emergency Medicine

Objective: To characterize risk factors for and consequences of post-traumatic stress disorder (PTSD) among older adults evaluated in the emergency department (ED) following motor vehicle collision (MVC). **Design:** Prospective multicenter longitudinal study (2011-2015). **Setting:** 9 EDs across the United States. **Participants:** Adults aged 65 years and older who presented to an ED after MVC without severe injuries. **Measurements:** PTSD symptoms were assessed 6 months after the ED visit using the Impact of Event Scale-Revised. **Results:** Of 223 patients, clinically significant PTSD symptoms at 6 months were observed in 21% (95% CI 16%-26%). PTSD symptoms were more common in patients who did not have a college degree, had depressive symptoms prior to the MVC, perceived the MVC as life-threatening, had severe ED pain, and expected their physical or emotional recovery time to be greater than 30 days. Three factors (ED pain severity [0-10 scale], perceived life-threatening MVC [0-10 scale], and pre-MVC depressive symptoms [yes to either of two questions]), predicted 6-month PTSD symptoms with an area under the curve of 0.76. Compared to patients without PTSD symptoms, those with PTSD symptoms were at higher risk for persistent pain (72% versus 30%), functional decline (67% versus 42%), and new disability (49% versus 18%). **Conclusions:** Among older adults treated in the ED following MVC, clinically significant PTSD symptoms at 6 months were present in 21% of patients and were associated with adverse health outcomes. Increased risk for PTSD development can be identified with moderate accuracy using information readily available in the ED.

Prabhu A, Kesarwani P, Kant S, **Graham SF** and **Chinnaiyan P** (2017). "Histologically defined intratumoral sequencing uncovers evolutionary cues into conserved molecular events driving gliomagenesis." *Neuro-Oncology*. ePub Ahead of Print.

[Full-Text](#)

Department of Obstetrics and Gynecology

Department of Radiation Oncology

BACKGROUND: Glioblastoma represents an archetypal example of a heterogeneous malignancy. To

understand the diverse molecular consequences of this complex tumor ecology, we analyzed RNA-seq data generated from commonly identified intra-tumoral structures in glioblastoma enriched using laser capture microdissection. METHODS: Raw gene-level fragments per kilobase of transcript per million reads mapped (FPKM) values and the associated clinical data were acquired from the publically available Ivy GAP database and analyzed using MetaboAnalyst (v.3.0). The database includes gene expression data generated from multiple structural features commonly identified in glioblastoma enriched by laser capture microdissection. RESULTS: We uncovered a relationship between subtype heterogeneity in glioblastoma and its unique tumor microenvironment, with infiltrating cells harboring a proneural signature while the mesenchymal subtype was enriched in perinecrotic regions. When evaluating the tumors' transcriptional profiles in the context of their derived structural regions, there was a relative small amount of inter-tumoral heterogeneity in glioblastoma, with individual regions from different tumors clustering tightly together. Analyzing the transcriptional profiles in the context of evolutionary progression identified unique cellular programs associated with specific phases of gliomagenesis. Mediators of cell signaling and cell cycle progression appear to be critical events driving proliferation in the tumor core, while in addition to a multiplex strategy for promoting angiogenesis and/or an immune tolerant environment, transformation to perinecrotic zones involved global metabolic alterations. CONCLUSION: These findings suggest intra-tumoral heterogeneity in glioblastoma is a conserved, predictable consequence to its complex microenvironment and combinatorial approaches designed to target these unequivocally present tumor biomes may lead to therapeutic gains.

Pressman AB and **Ditkoff JS** (2017). "Cervical pregnancy: Misdiagnosis and hemorrhage after pharmacologic therapy at an early gestational age: A case report." Journal of Reproductive Medicine 62(4): 445-448.

[Request Form](#)

Department of Emergency Medicine

BACKGROUND: Cervical ectopic pregnancy (CEP) is a rare form of ectopic pregnancy known classically for late diagnosis after pronounced hemorrhage requiring treatment with emergent hysterectomy. Advances in ultrasound have led to earlier diagnosis and treatment with methotrexate, thus sparing reproductive function. However, little is known about complications after methotrexate administration. CASE: A 31-year-old woman, G2P1001, at 6 weeks' gestational age presented to the emergency department for painless vaginal bleeding. Her β -hCG had trended down to 1,991 from 3,272 over the previous 36 hours. Her examination showed tissue in the cervical os, and an ultrasound showed no intrauterine pregnancy but revealed a cervical mass interpreted as an incomplete abortion. She returned when found to have increasing β -hCG, and a repeat ultrasound was then interpreted as CEP. The CEP was treated successfully with methotrexate, but 1 week later she experienced significant hemorrhage requiring curettage and tamponade with a cervical foley catheter. CONCLUSION: The current case highlights that upon presentation, early CEP is difficult to distinguish from incomplete abortion. Furthermore, the case shows that significant hemorrhage can occur after methotrexate administration at a much earlier gestational age and with a much smaller gestational sac size than was previously shown. © Journal of Reproductive Medicine®, Inc.

Rahmani S, **Capone A** and Yonekawa Y (2017). "Correspondence." Retina 37(6): e81-e83.

[Full-Text](#)

Department of Ophthalmology

Raleigh DR, **Seymour ZA**, Tomlin B, Theodosopoulos PV, Berger MS, Aghi MK, Geneser SE, Krishnamurthy D, Fogh SE, Sneed PK and McDermott MW (2017). "Resection and brain brachytherapy with permanent iodine-125 sources for brain metastasis." Journal of Neurosurgery 126(6): 1749-1755.

[Request Form](#)

Department of Radiation Oncology

OBJECTIVE Stereotactic radiosurgery (SRS) with or without whole-brain radiotherapy can be used to achieve local control (> 90%) for small brain metastases after resection. However, many brain metastases are unsuitable for SRS because of their size or previous treatment, and whole-brain radiotherapy is associated with significant neurocognitive morbidity. The purpose of this study was to investigate the efficacy and toxicity of surgery and iodine-125 (125I) brachytherapy for brain metastases. METHODS A total of 95

consecutive patients treated for 105 brain metastases at a single institution between September 1997 and July 2013 were identified for this analysis retrospectively. Each patient underwent MRI followed by craniotomy with resection of metastasis and placement of 125I sources as permanent implants. The patients were followed with serial surveillance MRIs. The relationships among local control, overall survival, and necrosis were estimated by using the Kaplan-Meier method and compared with results of log-rank tests and multivariate regression models. RESULTS The median age at surgery was 59 years (range 29.9-81.6 years), 53% of the lesions had been treated previously, and the median preoperative metastasis volume was 13.5 cm³ (range 0.21-76.2 cm³). Gross-Total resection was achieved in 81% of the cases. The median number of 125I sources implanted per cavity was 28 (range 4-93), and the median activity was 0.73 mCi (range 0.34-1.3 mCi) per source. A total of 476 brain MRIs were analyzed (median MRIs per patient 3; range 0-22). Metastasis size was the strongest predictor of cavity volume and shrinkage ($p < 0.0001$). Multivariable regression modeling failed to predict the likelihood of local progression or necrosis according to metastasis volume, cavity volume, or the rate of cavity remodeling regardless of source activity or previous SRS. The median clinical follow-up time in living patients was 14.4 months (range 0.02-13.6 years), and crude local control was 90%. Median overall survival extended from 2.1 months in the shortest quartile to 62.3 months in the longest quartile ($p < 0.0001$). The overall risk of necrosis was 15% and increased significantly for lesions with a history of previous SRS ($p < 0.05$). CONCLUSIONS Therapeutic options for patients with large or recurrent brain metastases are limited. Data from this study suggest that resection with permanent 125I brachytherapy is an effective strategy for achieving local control of brain metastasis. Although metastasis volume significantly influences resection cavity size and remodeling, volumetric parameters do not seem to influence local control or necrosis. With careful patient selection, this treatment regimen is associated with minimal toxicity and can result in long-Term survival for some patients. © AANS, 2017.

Rami Reddy SR and **Cappell MS** (2017). "A systematic review of the clinical presentation, diagnosis, and treatment of small bowel obstruction." Current Gastroenterology Reports 19(6): 28.

[Full-Text](#)

Department of Internal Medicine

Purpose of Review: This study aimed to systematically review small bowel obstruction (SBO), focusing on recent changes in diagnosis/therapy. Recent Findings: SBO incidence is about 350,000/annum in the USA. Etiologies include adhesions (65%), hernias (10%), neoplasms (5%), Crohn's disease (5%), and other (15%). Bowel dilatation occurs proximal to obstruction primarily from swallowed air and secondarily from intraluminal fluid accumulation. Dilatation increases mural tension, decreases mucosal perfusion, causes bacterial proliferation, and decreases mural tensile strength that increases bowel perforation risks. Classical clinical tetrad is abdominal pain, nausea and emesis, abdominal distention, and constipation-to-obstipation. Physical exam may reveal restlessness, acute illness, and signs of dehydration and sepsis, including tachycardia, pyrexia, dry mucous membranes, hypotension/orthostasis, abdominal distention, and hypoactive bowel sounds. Severe direct tenderness, involuntary guarding, abdominal rigidity, and rebound tenderness suggest advanced SBO, as do marked leukocytosis, neutrophilia, bandemia, and lactic acidosis. Differential diagnosis includes postoperative ileus, narcotic bowel, colonic pseudo-obstruction, mesenteric ischemia, and large bowel obstruction. Medical resuscitation includes intravenous hydration, correcting electrolyte abnormalities, intravenous antibiotics, nil per os, and nasogastric suction. Abdominal CT with oral and intravenous gastrografin contrast is highly sensitive and specific in detecting/characterizing SBO. SBO usually resolves with medical therapy but requires surgery, preferentially by laparoscopy, for unremitting total obstruction, bowel perforation, severe ischemia, or clinical deterioration with medical therapy. Overall mortality is 10% but increases to 30% with bowel necrosis/perforation. Summary: Key point in SBO is early diagnosis, emphasizing abdominal CT; aggressive medical therapy including rehydration, antibiotics, and nil per os; and surgery for failed medical therapy. © 2017, Springer Science+Business Media New York.

Ramírez DAM, Jiménez VMV, López XH and **Ysunza PA** (2017). "Acoustic analysis of voice and electroglottography in patients with laryngopharyngeal reflux." Journal of Voice. ePub Ahead of Print.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Background: Laryngopharyngeal reflux (LPR) refers to the flow of gastric acid content into the laryngopharynx. It has been reported that 10% of the patients consulting an otolaryngologist present with this condition. Signs of LPR can be identified during flexible or rigid laryngoscopy. The Voice Handicap Index (VHI) is a reliable tool for detecting the impact of voice disorders, and acoustic assessment of voice including acoustic analysis of voice (AAV) and electroglottography (EGG) provide objective data of voice production and voice disorders. Objective: This study aimed to describe changes in AAV, EGG, and VHI in patients who present with LPR compared with a matched control group of healthy subjects. Materials and Methods: Seventeen patients with LPR were studied. A group of healthy subjects matched by age and gender without any history of voice disorder, LPR, or gastroesophageal reflux disease was assembled. Both groups of patients were studied by VHI, flexible laryngoscopy, AAV, and EGG. Results: All patients with LPR demonstrated abnormal VHI values. Shimmer, jitter, open quotient, and irregularity were significantly increased in the patients with LPR. Nonsignificant correlations were found between VHI scores and abnormal acoustic parameters in patients with LPR. Conclusions: Although abnormal acoustic parameters of patients with LPR were not predictive of the overall VHI score, the abnormal acoustic parameters of patients with LPR suggest a decrease in adequate laryngeal control during phonation. © 2017 The Voice Foundation.

Randhawa S and Sharma M (2017). "A new macular dystrophy secondary to a novel mutation in the prominin 1 (prom1) gene." Retinal Cases & Brief Reports 11(Sup 1): S62-S64.

[Full-Text](#)

Department of Ophthalmology

PURPOSE: To report a case of a new macular dystrophy caused by a novel mutation in the PROM1 gene. METHODS: History and clinical examination, fluorescein angiography, optical coherence tomography, autofluorescence, electrophysiology, and genetics. RESULTS: We report a case of a 51-year-old man with progressive central visual loss in both his eyes. On fundus examination and imaging, there were asymmetric atrophic macular lesions in both his eyes. Electrophysiology revealed a bilateral macular atrophy; genetic testing revealed a novel PROM1 mutation as the probable cause. CONCLUSION: A novel PROM1 mutation as the cause of a new bilateral macular atrophy is revealed.

Reygaert W (2017). "Antimicrobial mechanisms of Escherichia coli," In Samie A (ed). Escherichia Coli – Recent Advances on Physiology, Pathogenesis and Biotechnological Applications. Rijeka, Croatia: InTech.

[Request Form](#)

Department of Biomedical Sciences (OU)

Rezaee ME, Ward CE, **Pollock M** and **Shetty SD** (2017). "Association between multiple chronic conditions and urolithiasis." International Urology and Nephrology 49(8): 1361-1367.

[Full-Text](#)

OUWB Medical Student Author

Department of Internal Medicine

Department of Urology

Purpose: Given the risk factors for stone disease, it is possible that multiple chronic condition (MCC) patients are at increased risk of developing new, recurrent, or worsening urolithiasis. The purpose of our investigation was to evaluate the relationship between MCCs and urolithiasis. Methods: Retrospective cohort using outpatient claims data for all adult members (≥ 18 years) of the Beaumont Employee Health Plan who received outpatient care between 2008 and 2013. Multiple logistic regression adjusted for age, sex, obesity, hyperlipidemia, hypertension, and diabetes was used to assess the relationship between number of comorbid chronic conditions and urolithiasis. Results: The cohort consisted of 34,173 adult patients with an average age of 40.4 years and 61.2% being female. The prevalence of urolithiasis was 3.1% (n = 1059). Patients with urolithiasis had a significantly higher average number of comorbid chronic conditions (2.4 vs.

1.3, $p < 0.001$) than patient without urolithiasis. Both crude (OR 1.34; 95% CI 1.30–1.38) and adjusted logistic regression models (OR 1.37; 95% CI 1.31–1.44) revealed a significant relationship between number of comorbid chronic conditions and urolithiasis. More than 81% of patients had one or more co-occurring chronic conditions; the most common MCC combinations associated with urolithiasis were hypertension–hyperlipidemia, chronic back pain, and hyperlipidemia. Conclusion: We report an association between MCCs and urolithiasis. Future research is needed to better understand the temporality and strength of this relationship. Physicians should recognize that urolithiasis and MCCs are closely related and therefore may consider more aggressive primary prevention of chronic disease and improved management of MCCs. © 2017, Springer Science+Business Media Dordrecht.

Roach VA, Fraser GM, Kryklywy JH, Mitchell DGV and Wilson TD (2017). "Different perspectives: Spatial ability influences where individuals look on a timed spatial test." *Anatomical Sciences Education* 10(3): 224-234.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Learning in anatomy can be both spatially and visually complex. Pedagogical investigations have begun exploration as to how spatial ability may mitigate learning. Emerging hypotheses suggests individuals with higher spatial reasoning may attend to images differently than those who are lacking. To elucidate attentional patterns associated with different spatial ability, eye movements were measured in individuals completing a timed electronic mental rotation test (EMRT). The EMRT was based on the line drawings of Shepherd and Metzler. Individuals deduced whether image pairs were rotations (same) or mirror images (different). It was hypothesized that individuals with high spatial ability (HSA) would demonstrate shorter average fixation durations during problem solving and attend to different features of the EMRT than low spatial ability (LSA) counterparts. Moreover, question response accuracy would be associated with fewer fixations and shorter average response times, regardless of spatial reasoning ability. Average fixation duration in the HSA group was shorter than LSA ($F(1,8) = 7.99; P=0.022$). Importantly, HSA and LSA individuals looked to different regions of the EMRT images (Fisher Exact Test: 12.47; $P=0.018$); attending to the same locations only 34% of the time. Correctly answered questions were characterized by fewer fixations per question ($F(1, 8) = 18.12; P=0.003$) and shorter average response times ($F(1, 8) = 23.89; P=0.001$). The results indicate that spatial ability may influence visual attention to salient areas of images and this may be key to problem solving processes for low spatial individuals. (C) 2016 American Association of Anatomists.

Rubin AD (2017). "Guest editorial. Unable to say hello from the other side." *ENT: Ear, Nose & Throat Journal* 96(2): 58-59.

[Request Form](#)

Department of Surgery

The author describes the concert he hosts annually in honor of World Voice Day, which is celebrated every April 16th to raise awareness of laryngeal cancer. He discusses the significance of the participation of his patients who have lost and regained their voice in the concert, as well as the importance of the celebration to otolaryngologists. He also shares his experience of developing a polyp in his left vocal fold.

Sacotte R, **Vakharia P**, Chopra R, **Patel N**, Immaneni S, White T, Kantor R, Hsu D and Silverberg J (2017). "Establishing severity strata for 5 different patient-reported outcomes in adults with atopic dermatitis." *Journal of Investigative Dermatology* 137(Sup 1): S66.

[Full-Text](#)

OUWB Medical Student Author

Safian RD (2017). "Asymptomatic carotid artery stenosis: Revascularization." *Progress in Cardiovascular Diseases* 59(6): 591-600.

[Full-Text](#)

Department of Internal Medicine

In patients with carotid stenosis, the most common cause of stroke is atheroembolization, and the risk is strongly related to stenosis severity and symptomatic status (stroke or transient ischemic attack within

6 months). Carotid revascularization by carotid endarterectomy (CEA) or carotid artery stenting (CAS) results in plaque "passivation" by lumen enlargement, plaque removal, or plaque coverage with subsequent endothelialization. While there is considerable circumstantial evidence linking a decrease in the risk of stroke to the use of "optimal medical therapy (OMT)", the components of OMT have not been defined, and such therapy has not been rigorously evaluated in any randomized clinical trial (RCT) compared with revascularization. Studies of other vascular patients suggest that statins decrease the risk of stroke by anti-inflammatory effects, rather than cholesterol reduction. The Carotid Revascularization Endarterectomy versus Stent Trial (CREST-2) is currently randomizing standard-risk patients with asymptomatic severe carotid stenosis to OMT alone versus OMT plus CEA or CAS, but results are not expected until 2020. In the meantime, data from several "landmark" trials of CEA versus aspirin demonstrated 45–65% reduction in the 5-year risk of stroke after CEA. Several RCTs demonstrate superiority of CAS over CEA in high-risk patients (those at high-risk for CEA), and equivalence of CAS and CEA in standard-risk patients (those at acceptable risk for CEA). Compared with CEA, CAS is associated with significantly less periprocedural myocardial infarction, cranial nerve injury, and neurological injury (cranial nerve injury plus stroke); higher risk of minor stroke; and similar risk of long-term stroke. Features that increase the risk of CAS include complex aortic arch and carotid anatomy, and features that increase the risk of CEA include severe underlying cardiopulmonary disease and hostile neck anatomy; age > 80 years, especially those with baseline cognitive impairment, are at higher risk for stroke after CEA and CAS.

Safian RD (2017). "Carotid artery revascularization the known knowns and the known unknowns." Journal of the American College of Cardiology 69(18): 2276-2278.

[Full-Text](#)

Department of Internal Medicine

Sahebjam S, Sharabi A, Lim M, Kesarwani P and **Chinnaiyan P** (2017). "Immunotherapy and radiation in glioblastoma." Journal of Neuro-Oncology: 1-9. ePub Ahead of Print.

[Full-Text](#)

Department of Radiation Oncology

Radiation therapy plays a central role in the management of glioblastoma. Although primarily thought of as modality to provide local tumor control through DNA damage, the capacity of ionizing radiation to modulate tumor immune response has long been recognized. The recent emergence of clinically active immunotherapies offers exciting potential for harnessing the immune modulatory effects of radiation through combinatorial strategies designed to enhance clinical outcomes. In this Review, we provide background describing the unique immune environment within the central nervous system, how ionizing radiation may modulate the tumor immune response, preclinical and clinical data testing the combination of radiation and immune modulating agents, and highlight some of the current challenges in extending these findings clinically. © 2017 Springer Science+Business Media New York

Sahler OJZ and **Zhao J** (2017). "Effect on healthcare utilization of incorporating biofeedback into the management of pain and anxiety in adolescents." Alternative & Complementary Therapies 23(4): 139-143.

[Request Form](#)

OUWB Medical Student Author

Background: Biofeedback is the process by which individuals, using external monitoring devices, learn to control physiologic functioning through psycho-physiologic self-regulation. Biofeedback is reported to have therapeutic effects on conditions such as chronic pain and anxiety, but few studies have investigated the effect on healthcare resource utilization of incorporating biofeedback into the management plan of adolescents/young adults with these complaints. Materials and Methods: Fifty-two patients, identified from a hospital database, were seen for new patient visits regarding candidacy for thermal biofeedback-enhanced relaxation sessions by the first author at our adolescent medicine clinic between January 1, 2014, and June 30, 2015. Variables of interest included total number of office visits, phone calls and e-mails (from patients or parents), emergency department visits, and hospitalizations during the year before and after the first biofeedback visit. Results: Of the 52 patients, other medical or complementary management was

recommended in lieu of biofeedback for seven patients, and they were therefore excluded from the study. Diagnoses of patients accepted for biofeedback included anxiety, headache, gastrointestinal symptoms including abdominal pain, and amplified musculoskeletal pain syndrome. The average number of office visits, and phone calls and e-mails all decreased significantly (P50.01 and P50.03, respectively), and the number of emergency room visits decreased from 12 to 5 (P50.06). Conclusions: Thermal biofeedback-enhanced relaxation can be used effectively to reduce patient/family medical/behavioral resource utilization and thus help to decrease healthcare costs.

Sakr S, **Al-Wahab Z**, Abdulfatah E, **Rosen BP**, Morris RT, Munkarah AR and Ali-Fehmi R (2017). "Granulosa cell tumors: A SEER data review of prognostic parameters in 1815 patients." *Gynecologic Oncology* 145(2017): 127.

[Full-Text](#)

Department of Obstetrics and Gynecology

Objective: To identify the clinicopathological variables affecting prognosis and survival outcomes in patients with granulosa cell tumors. Method: The Surveillance, Epidemiology and End Results (SEER) database was searched for patients diagnosed with adult (AGCT) and juvenile (JGCT) granulosa cell tumors. Demographic characteristics and prognostic factors including age, race, marital status, FIGO stage, surgery, tumor size, and lymphadenectomy were analyzed using log rank and Kaplan-Meier curves for overall survival (OS) and Cox regression analysis. Results: There were 1,794 and 21 patients identified with AGCT and JGCT, respectively. Of all the AGCT patients, 1,081 (60.2%) were unstaged, 395 (22%) stage I, 80 (4.5%) stage II, 158 (8.8%) stage III, and 80 (4.5%) stage IV. Patients with AGCT older than 50 years had better 10-year OS than patients younger than 50 years (85.3% vs 63.8%, P b 0.05; HR = 2.4, P =0.003), whereas patients with JGCT had a 3-year OS of 63.4%. Surgically staged I-II patients had better survival compared to nonstaged and advanced-stage III-IV patients (HR =10.6, P= 0.0005; 10-year OS = 93.8%, 69.9%, and 49.4%, respectively, P b 0.05). No survival difference was noted between stages IA, IB, and IC nor between Caucasians and African-Americans. Patients with tumors greater than 5 cm had significantly worse 10-year OS (98.1% vs 85.1%, P b 0.05). Lymphadenectomy in AGCT was associated with significantly better OS (89.8% vs 71.2%, P b 0.05). Regression analysis revealed that older age (N50 years), early stage, and lymphadenectomy were independently associated with better OS (HR = 0.41, 0.01, and 0.49, respectively, P b 0.05). Clinically apparent stage I (unstaged) patients had worse 10-year OS, 70.3%, compared to surgical stage I patients, 89.3% (P b 0.05). (See Fig. 1.) Conclusion: Patients with clinical early-stage disease had significantly shorter OS compared to those with surgically confirmed earlystage disease. Age, stage, and lymphadenectomy were independent predictors of survival outcome.

Sampselle CM, Newman DK, Miller JM, Kirk K, DiCamillo MA, Wagner TH, Raghunathan TE and **Diokno AC** (2017). "A randomized controlled trial to compare 2 scalable interventions for lower urinary tract symptom prevention: Main outcomes of the TULIP Study." *Journal of Urology* 197(6): 1480-1486.

[Full-Text](#)

Department of Urology

Purpose We compared 2-year urinary incontinence and urgency scores of older women who attended a 2-hour bladder health class vs those who viewed a 20-minute abbreviated class video for the purpose of urinary incontinence prevention. Materials and Methods A randomized, 2-arm, parallel design study was done to test the superiority of the 20-minute video over the 2-hour class. Outcomes at baseline, and 3, 12 and 24 months were the scores on questions 1 to 3 of ICIQ-SF (International Consultation on Incontinence Short Form) as the primary outcome and on IUSS (Indevus Urgency Severity Scale). Intent to treat analysis was done to compare the change from baseline in each intervention group across time and also with each other. Multiple imputation was used for missing data. Results A total of 647 women participated in the study. Mean age was 63 years and approximately 28% of the participants were African American, primarily from an urban setting. The 2 arms were balanced on body mass index at baseline, age, race/ethnicity, education, employment status, income and marital status. No differences in primary or secondary outcomes were demonstrated between the 2 groups from baseline to the 3, 12 or 24-month visits. Conclusions The absence of significant differences in the outcome measures of ICIQ-SF and IUSS between the 2-hour class and the 20-minute video groups demonstrates that the 2 interventions were comparable. As urinary incontinence and

urgency tend to rise annually in older women, instruction in bladder health self-care provided through either the 2-hour class or the 20-minute video format is a useful intervention to prevent urinary incontinence in older women. © 2017 American Urological Association Education and Research, Inc.

Sangal RB (2017). "Baseline sleep efficiency and arousal index do not predict who will benefit from sedatives in improving positive airway pressure adherence in sleep apnea to 90." Clinical EEG and Neuroscience: 1-5. ePub Ahead of Print.

[Full-Text](#)

Department of Family Medicine

Positive airway pressure (PAP) is the preferred treatment for obstructive sleep apnea (OSA), but adherence is low. Educational or ongoing supportive intervention improves the number of PAP adherent patients from the 50% to the 70% range. A common side effect of PAP is increased awakenings. This prospective trial examined baseline polysomnographically derived sleep efficiency and arousal index in PAP adherent and nonadherent patients, and in patients needing sedating medicines to attain PAP adherence versus those who did not need such medicines. Patients with OSA were titrated on PAP during a polysomnography or treated with autotitrating PAP, followed by educational and supportive interventions. Patients with PAP related awakenings (patients describing waking up and taking PAP off in the middle of the night) or difficulty tolerating PAP were additionally treated with medicines that suppress arousals/awakenings (trazodone, mirtazapine, doxepin). A total of 120 of 151 (79%) new patients were $\geq 70\%$ PAP adherent over a continuous 30-day period, typically within the first 90 days of starting PAP, without sedating medicines. Nineteen of the remaining patients were treated with medicines that suppress arousals and awakenings, and 16 became adherent, resulting in 136 (90%) of 151 new patients achieving adherence. There were no differences in baseline sleep efficiency or arousal index, between adherent and nonadherent patients, as well as between patients who needed sedating medicines for PAP adherence and those who did not. Adding medicines that suppress arousals and awakenings for patients having trouble tolerating PAP, increases the number of patients who are PAP adherent. The need for such medicines seems to be related to the PAP side effect of increased awakenings rather than baseline impaired sleep.

Sarigiannis K, Hudson M and **Uhley V** (2017). "Title: United States Department of Agriculture (USDA) myplate-based nutrition education program increases adolescent female athlete intention to consume more fruits and vegetables." FASEB Journal 31(1): 957.921.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

Introduction: The average American diet is low in essential vitamins, minerals, fruits and vegetables, while high in saturated fats, added sugars, and sodium. The incidence of adolescent obesity has continued to rise and greatly increases the risk of developing chronic diseases. School-based interventions may be a particularly effective method to establish lifelong dietary habits from a young age. The goal of this study is to assess the efficacy of a nutrition education program in improving high school-aged female athletes' knowledge of and attitudes about healthy eating. Methods: High school cheerleaders were recruited to participate in a nutrition education program developed using resources provided by the United States Department of Agriculture MyPlate initiative and Dietary Guidelines for Americans 2010. Pre- and post-intervention questionnaires were developed within the frameworks of the Transtheoretical Model of Behavior Change and Theory of Planned Behavior. Assessment included the impact of the nutrition curriculum on: general nutrition knowledge; number of servings of fruits and vegetables consumed daily; self-efficacy and intention to eat more fruits and vegetables; and perceived diet quality. Participants were placed into the following stages within the Transtheoretical Model based on daily fruit and vegetable intake and intention to consume more fruits and vegetables: precontemplation, contemplation, preparation, action, and maintenance. Results: After attending class sessions, average participant intention to consume more fruits increased by 2.00 stages of change ($p < 0.016$) while intention to consume more vegetables increased by 1.75 stages of change ($p < 0.03$). Participants showed statistically significant improvement in their perceived diet quality, 1.50 ($p < 0.01$). Participants exhibited a marginally significant increase in average nutrition knowledge

scores post-intervention (53% vs 75%, $p < 0.09$). After class completion, average vegetable consumption increased by 0.75 servings per day ($p < 0.058$). No statistically significant change in daily fruit consumption was observed. Data was analyzed using paired t-test. Conclusions: Outcomes of this study support the use of school-based nutrition education interventions as effective means to promote healthy eating. Further studies are needed to determine the long-term effect of nutrition education on health outcomes.

Savasan ZA, Heasley E, Abdulahad A and Zeb A (2017). "Does IVF treatment (autologous and donor oocyte) improve pregnancy outcomes in women 40 years and older?" *Obstetrics and Gynecology* 129(Sup 1): 118S.

[Request Form](#)

Department of Obstetrics and Gynecology

INTRODUCTION: Determine perinatal outcomes in women older than 40 years with IVF treatment (autologous and donor oocyte) compared with spontaneous pregnancy (SP). **METHODS:** Retrospective case control study of singleton pregnancies with maternal age 40 years and older between 2012-2014. Adverse perinatal outcomes included preterm delivery (PTD), hypertensive disorders of pregnancy (HDP), cesarean section (CS), gestational diabetes (GDM), intrauterine growth restriction (IUGR) and fetal loss (IUFD). Composite neonatal outcomes (CNO) included respiratory distress, intraventricular hemorrhage, necrotizing colitis, jaundice, NICU admission and neonatal death. **RESULTS:** Among 249 patients, 102 were IVF conceptions. Median maternal age (years) was 41 (40-50) for SP and 43 (40-52) for IVF ($p < 0.05$). Logistic regression showed OR for PTD 2.3 (95% CI:1.1-4.7; $p < 0.024$), HDP 2.5 (95% CI:1.2-5.1; $p < 0.016$), CS 2.8 (95% CI:1.7- 4.7; $p < 0.0001$), CNO 3.1 (95% CI:1.7-5.8; $p < 0.0001$) in IVF pregnancies. These remained statistically significant after adjusting for maternal age. The risk of GDM, IUGR and IUFD was not significantly different between the two groups. Out of 102 IVF conceptions, 47 used donor eggs. These outcomes were not significantly different between donor and autologous oocyte pregnancies. **CONCLUSION:** IVF treatment is associated with adverse maternal and neonatal outcomes whereas oocyte donation does not improve these outcomes in women 40 years and older.

Savasan ZA and Zeb A (2017). "Optimal management and delivery time for intrahepatic cholestasis of pregnancy: Meta-analysis." *Obstetrics and Gynecology* 129(Sup 1): 51S.

[Request Form](#)

Department of Obstetrics and Gynecology

INTRODUCTION: To determine the risk of adverse perinatal outcomes in patients with intrahepatic cholestasis of pregnancy (IHCP) with gestational age at delivery and treatment modalities. **METHODS:** A systematic search of MEDLINE, EMBASE, Web of Science and Cochrane Central Register of Controlled Trials was performed. The inclusion criteria consisted of randomized controlled clinical trials (RCTs) consisting of ursodeoxycholic acid (UDCA) compared with other treatments like placebo, dexamethasone, cholestyramine and SMAe for IHCP. **RESULTS:** 11 RCTs were eligible for analysis. Data was analyzed on 542 patients, of which 281 received UDCA and 261 received other treatments. Use of UDCA delayed gestational age at delivery by \pm days (SMD0.59 (95% CI: 0.08-1.09); $p < 0.001$). Risk for preterm delivery and NICU admission decreased in group treated with UDCA compared to other treatments (RR0.52 (95% CI: 0.38-0.72); $p < 0.001$ and RR0.53 (95% CI: 0.29-0.97); $p < 0.038$), respectively. Risk of adverse perinatal outcomes was decreased for delivery at 36 weeks (RR0.59 (95% CI: 0.39-0.90); $p < 0.013$) compared for delivery at 37 weeks. UDCA treatment decreased the risk of meconium staining and c-section with increased birth weight but these results did not show statistical significance. **CONCLUSION:** Treatment choice of IHCP should be UDCA and 36 weeks appeared to be the optimal time of delivery.

Savasan ZA, Zeb A and Scott L (2017). "Twin anemia polycythemia sequence: A complication of monochorionic diamniotic twin gestation." *Obstetrics and Gynecology* 129(Sup 1): 168S.

[Request Form](#)

Department of Obstetrics and Gynecology

INTRODUCTION: Twin anemia polycythemia sequence (TAPS) is an important prenatal complication of monochorionic twin gestations due to abnormal placental vascular anastomosis. Prenatal ultrasound is the only screening modality. Our objective was to evaluate the prediction potential of current prenatal

ultrasound screening in diagnosing TAPS in monochorionic diamniotic twin gestations. METHODS: Maternal and neonatal medical records were reviewed for women with monochorionic diamniotic twins who delivered at Beaumont Hospital System (Royal Oak and Troy) from 2009–2014. Available prenatal ultrasound findings were compared with the neonatal outcomes. Postnatal TAPS diagnosis was confirmed with neonatal peripheral blood hemoglobin values. RESULTS: A total of 132 maternal charts were reviewed and 102 were used in data collection. The median maternal age was 31 years (19–45) with a median parity of 1 (0–3). Among these women 10% (n510) had assisted reproductive technology. Median gestational age at time of delivery was 35.4 weeks (20.7–39). Median NICU stay for twin A and twin B were 9 (0–264) and 8.5 days, (0–103), respectively. Among 132 prenatal ultrasound screenings, 26% (n532) were reported as abnormal. Thirty-three percent (n534) of the neonates were diagnosed with anemia and polycythemia; of these neonates 29% (n530) had anemia, 4% (n54) had polycythemia. The sensitivity and specificity of prenatal ultrasound in the prediction of TAPS was 26% (95% CI: 13–44) and 77% (95% CI: 65–87), respectively. CONCLUSION: Current prenatal ultrasound screening guidelines have low sensitivity and specificity in predicting TAPS in monochorionic diamniotic twin gestations. New and updated prenatal screening methods may improve TAPS prediction.

Schmidt B, Thompson BJ and Chang A (2017). "The use of clay models to teach pelvic anatomy to first and second year medical students at OUWB School of Medicine." *FASEB Journal* 31(1): 582.581.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

Introduction Pelvic anatomy is often a difficult concept for medical students to grasp due to difficulties in dissections and visualization of the three-dimensional aspects of anatomical relationships. To improve student knowledge of pelvic anatomy and increase student perceptions of confidence in that knowledge, a new pelvic anatomy workshop has been developed. Methods Second year Oakland University William Beaumont School of Medicine (OUWB) students attended a workshop employing a new method of teaching pelvic anatomy. This workshop assisted students in assembling pelvic structures using a bony pelvis and colored clay. The efficacy of this workshop in helping medical students learn and retain the anatomical relationships of the pelvis was assessed using pre- and post-surveys with Likert scales, and multiple choice questions. Since the participation number was small (n=16), we assessed changes in confidence and knowledge for the group rather than the individual. Descriptive statistical analysis will compare frequencies and mean scores of the pre and post data. Results The preliminary data show that students attending the workshops had a statistically significant increase in their confidence of knowledge of the pelvis/perineum, average increase of 1.36 (p<0.001). The testing was done using a paired t-test. Students also had an average increase of 1.86 in their confidence to teach another student the anatomy of the pelvis/perineum (p<0.05). An exact McNemar test was used to examine the pretest-posttest changes in the proportion of students that reported correct responses before and after the workshop. Conclusion Expanding the use of learning styles that go beyond the standard lectures and dissections, used in most first and second year medical school courses, will allow students to take what they learn and create a simpler, visually concrete model to study from. Quantitate data from this preliminary study indicate that the use of clay modeling to learn pelvic anatomy increases students' confidence in their knowledge of pelvic anatomy and in their ability to share this knowledge with other students. Based on these findings we believe that the use of modeling to learn pelvic anatomy warrants further investigation.

Schneider AD, Jakus A, Smith JT, Katchko KM, Chun DS, Weiner JA, Cook RW, Schallmo MS, Newton M, Maerz T, **Baker K**, Shah R, Hsu WK and Hsu EL (2017). "Development of a ceramic-demineralized bone matrix biomaterial ink for 3D-printing of hyperelastic bone composite scaffolds for spinal fusion." *Journal of Orthopaedic Research* 35(Sup 1): No. 1339.

[Request Form](#)

Department of Orthopedic Surgery

INTRODUCTION: Pseudarthrosis occurs in 10–15% of patients who undergo spine fusion. The development of an efficacious and safe bone graft substitute (BGS) is a major research focus. Recombinant human bone

morphogenetic protein-2 (rhBMP-2) is a biologic BGS that elicits high fusion rates but is associated with serious adverse effects. Both DBM and synthetic ceramics have improved safety profiles over rhBMP-2, but alone have insufficient osteoinductivity, low structural strength and/or poor handling properties. We have developed a unique 3D-printable biomaterial ink consisting of various hydroxyapatite (HA)- demineralized bone matrix (DBM) compositions to 3D-print Hyperelastic "Bone" composite (HBC) scaffolds¹. We evaluated the capacity of these HBC scaffolds to promote bone regeneration and spine fusion in a rat posterolateral spine fusion (PLF) model. METHODS: After obtaining IACUC approval, 60 Sprague-Dawley rats underwent a posterolateral spine fusion at L4-L5 with placement of one of five Hyperelastic "Bone" scaffolds. Each scaffold consisted of 30 vol.% PLGA, which served as an elastomer. The remaining 70 vol.% was composed of varying ratios of HA and DBM particles. Treatment groups were as follows: (1) 1:0 HA:DBM; (2) 3:1 HA to DBM; (3) 1:1 HA to DBM; (4) 1:3 HA to DBM; or (5) 0:1 HA:DBM [Figure 1A]. At 8 weeks postoperative, spines were evaluated for bone formation and successful fusion using plain radiographs, manual palpation for motion between segments, and synchrotron microCT imaging. Fusion was assessed via manual palpation by 3 blinded investigators using an established scoring system: 0=no fusion, 1=unilateral bridging and lack of motion between segments, and 2=bilateral bridging and lack of motion. Spines with an average score ≥ 1.0 were considered successfully fused. RESULTS: In the animals treated with the 3:1 HA:DBM composite, 11/12 (92%) achieved successful fusion. This was greater than the 7/12 (58%) seen in both the 1:1 HA:DBM and 1:0 HA:DBM groups, the 8/12 (67%) rate seen in the 1:3 HA:DBM group, and the 5/12 (42%) in the 0:1 HA:DBM alone group [Figure 1B]. MicroCT imaging showed new bone formation integrating within the implanted scaffold [Figure 1C]. DISCUSSION: This study evaluated the use of novel HA-DBM biomaterial inks to 3D-print hyperelastic bone composite (HBC) scaffolds containing varying ratios of bioactive components. Both the HA and DBM components are osteoconductive and osteoinductive, and all variations of composites had advantageous handling properties over many of the currently available ceramic-based bone graft substitutes. Fusion scoring suggests that a ratio of 3 parts HA to 1 part DBM may represent the most potent iteration for spine fusion in the rat PLF model. Continued improvements and modifications to the 3D-printed scaffold architecture (e.g. pore size, strut configuration, etc.) may further improve the bone regenerative capacity of the HBC. (Figure Presented).

Schneider M and **Levasseur K** (2017). "Young infant with vomiting." Annals of Emergency Medicine 69(5): 576-631.

[Full-Text](#)

Department of Emergency Medicine

Schuiteman E, Verrill T, Mina N and **Dalal B** (2017). "Constrictive pericarditis-induced shunting through a PFO: Persistence despite pericardiectomy." Respiratory Medicine Case Reports 22(2017): 28-30.

[Full-Text](#)

Department of Internal Medicine

A patent foramen ovale (PFO) is found in around 25–30% of patients. The discovery is often made only on autopsy, as most PFOs are clinically silent and any inter-atrial blood exchange typically shunts from the left to right heart [1]. Thus, when a patient presents with hypoxic respiratory failure, concern for presence of a PFO is rarely at the top of the differential. However, in the setting of elevated right heart pressures, PFOs can become of great hemodynamic importance and can lead to deadly complications, including right to left shunting and refractory hypoxic respiratory failure. We present an unusual case of constrictive pericarditis leading to significant shunting through a PFO, and resultant hypoxic respiratory failure which only resolved with PFO closure.

Schweitzer J, Ellis C, **Young M**, Gildenberg S and Altman D (2017). "Eosinophilic fasciitis." Journal of the American Academy of Dermatology 76(6): AB122.

[Full-Text](#)

Department of Pathology

Shaffer K, Abbott E and **Novotny N** (2017). "Delayed presentation of rare-earth magnets (LETTER)." Journal of Paediatrics and Child Health 53(5): 515-516.

[Full-Text](#)

Department of Surgery

Shaffer K, **Danko M**, DeLaere A, Chant E, Pople B, Grisby S and **Dekhne N** (2017). "Patient satisfaction following nipple-sparing mastectomy and assessment of nipple-areolar sensation." Annals of Surgical Oncology 24(2): 233-234.

[Full-Text](#)

OUWB Medical Student Author

Department of Surgery

Background/Objective: The number of patients undergoing nipple-sparing mastectomy (NSM) has been increasing as the indications for this procedure continue to grow. The goal of this study is to describe our experience with NSM in regard to aspects of overall patient satisfaction, quality of life, and particularly nipple sensation. We anticipated that overall patient satisfaction would be high but rates of post-operative nipple sensation would be low, especially in patients with a smoking history. Methods: Eighty-nine women who underwent NSM since 2008 by a single surgeon were sent a survey administered between 2 to 9 years after surgery. Survey questions used a 5-point scale with questions pertaining to overall patient satisfaction, regrets regarding the procedure, recommending the procedure to another patient, and the preservation of nipple sensation. Demographic and clinical information were also collected from a patient database. Results: Forty of 89 women responded to the survey. The mean patient age was 48 years. Thirty-five of the patients underwent bilateral NSM, with 80% undergoing immediate reconstruction with silicone implants, and 13 were BRCA positive. Overall, 70% of patients were very satisfied with their decision to undergo NSM, and 80% of patients rated their quality of life as content or very content post-operatively. Seventy-two percent of patients would encourage a friend to have a prophylactic NSM, and 70% have never regretted undergoing the procedure. No patients had normal nipple sensation, but 35% did report having some level of sensation (5 very little, 7 some, 2 mostly normal) to the nipple. More specifically, women who reported a smoking history had lower rates of residual nipple sensation than those who did not smoke. Fifty-two percent (13/25) of non-smokers reported no nipple sensation compared to 87% (13/15) of smokers ($p=0.04$). Neither age at surgery nor time since surgery appeared to be related to preserved nipple sensation. Conclusions: The majority of patients undergoing NSM are satisfied with their procedure, would recommend it to another patient, and rated their overall quality of life positively. Similar to other studies there was a low rate of residual nipple sensation following NSM. However, we also found decreased rates of nipple sensation in patients with a smoking history, which could impact pre-operative discussion with patients.

Siljander MP, Vara AD, Koueiter DM, **Wiater BP** and **Wiater PJ** (2017). "Novel anterior plating technique for patella fracture fixation." Orthopedics 40(4): e739-e743.

[Request Form](#)

Department of Orthopedic Surgery

Patella fracture fixation remains a significant challenge for orthopedic surgeons. Although tension band fixation allows for reliable osseous union, especially in simple fracture patterns, it still presents several problems. Plate fixation of patella fractures is a method that allows for more rigid stabilization and earlier mobilization. At the authors' level 1 trauma center, one fellowship-trained trauma surgeon has transitioned to using a novel anterior, low-profile mesh plate construct for all types of patella fractures. This construct allows for stable fixation, osseous union, and neutralization of the inferior pole for even the most comminuted of patella fractures. Copyright © SLACK Incorporated.

Sims M, Mariyanovski V, McLeroth P, Akers W, Lee YC, Brown ML, Du J, Pedley A, Kartsonis NA and Paschke A (2017). "Prospective, randomized, double-blind, Phase 2 dose-ranging study comparing efficacy and safety of imipenem/cilastatin plus relebactam with imipenem/cilastatin alone in patients with complicated urinary tract infections." Journal of Antimicrobial Chemotherapy. ePub Ahead of Print.

[Full-Text](#)

Department of Internal Medicine

Objectives: The beta-lactamase inhibitor relebactam can restore imipenem activity against imipenem non-susceptible pathogens. **Methods:** To explore relebactam's safety, tolerability and efficacy, we conducted a randomized (1:1:1), controlled, Phase 2 trial comparing imipenem/cilastatin+relebactam 250 mg, imipenem/cilastatin+relebactam 125 mg and imipenem/cilastatin alone in adults with complicated urinary tract infections (cUTI) or acute pyelonephritis, regardless of baseline pathogen susceptibility. Treatment was administered intravenously every 6 h for 4-14 days, with optional step-down to oral ciprofloxacin. The primary endpoint was favourable microbiological response rate (pathogen eradication) at discontinuation of intravenous therapy (DCIV) in the microbiologically evaluable (ME) population. Non-inferiority of imipenem/cilastatin+relebactam over imipenem/cilastatin alone was defined as lower bounds of the 95% CI for treatment differences being above -15%. **Results:** At DCIV, 71 patients in the imipenem/cilastatin+250 mg relebactam, 79 in the imipenem/cilastatin+125 mg relebactam and 80 in the imipenem/cilastatin-only group were ME; 51.7% had cUTI and 48.3% acute pyelonephritis. Microbiological response rates were 95.5%, 98.6% and 98.7%, respectively, confirming non-inferiority of both imipenem/cilastatin+relebactam doses to imipenem/cilastatin alone. Clinical response rates were 97.1%, 98.7% and 98.8%, respectively. All 23 ME patients with imipenem non-susceptible pathogens had favourable DCIV microbiological responses (100% in each group). Among all 298 patients treated, 28.3%, 29.3% and 30.0% of patients, respectively, had treatment-emergent adverse events. The most common treatment-related adverse events across groups (1.0%-4.0%) were diarrhoea, nausea and headache. **Conclusions:** Imipenem/cilastatin+relebactam (250 or 125 mg) was as effective as imipenem/cilastatin alone for treatment of cUTI. Both relebactam-containing regimens were well tolerated. (NCT01505634).

Smith A, Kull A, Thottam P and Sheyn A (2017). "Pyriform aperture stenosis: A novel approach to stenting." Annals of Otolaryngology, Rhinology and Laryngology 126(6): 451-454.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Objectives: Congenital nasal pyriform aperture stenosis (CNPAS) is one of several causes of neonatal respiratory distress. Congenital nasal pyriform aperture stenosis can be diagnosed by clinical presentation and evaluated by computed tomography for degree of stenosis. Surgical management of indicated cases involves drillout of pyriform aperture with placement of stents. The following case presents a novel approach to choice of stent in these patients. **Case Presentation:** We report the case of an infant diagnosed with CNPAS who underwent surgical correction at 9 days of life, with placement of mometasone fuorate stents. **Discussion:** Although relatively uncommon, CNPAS is a type of airway obstruction that causes cyclic cyanosis and failure to thrive in affected infants. If uncorrected medically, surgical interventions can successfully restore patency of the nasal cavity. While traditional stents can result in undesired complications, the use of mometasone fuorate stents presents an alternative without the typically associated risks. **Conclusion:** The use of mometasone fuorate stents may be a helpful option for otolaryngologists looking for the potential to avoid restenosis, plugging, and nasal alar necrosis in patients undergoing surgical treatment of CNPAS.

Smith JT, Wilhelm SK, Baker EA, Wiater JM and Baker KC (2017). "Serum bone turnover biomarkers in revision surgery for shoulder arthroplasty loosening." Journal of Orthopaedic Research 35(Sup 1): No. 0708.

[Full-Text](#)

OUIWB Medical Student Author

Department of Orthopedic Surgery

INTRODUCTION: With increased volumes of shoulder arthroplasty being performed worldwide, there is interest in developing assays that can enhance decision making regarding the need for revision procedures. Component loosening remains as an important clinical challenge in shoulder arthroplasty and is one

potential target for the development of prognostic assays. The purpose of this study was to compare the levels of circulating biomarkers associated with bone metabolism in patients with well-functioning shoulder arthroplasty components versus patients scheduled for revision arthroplasty due to component loosening, or implant failure. METHODS: Twenty participants were recruited into the study, nineteen having received a primary shoulder arthroplasty for treatment of osteoarthritis (OA) and one for a proximal humerus fracture. The experimental group (n=10) consisted of participants suffering prosthesis failure and scheduled for revision shoulder arthroplasty. The control group (n=10) consisted of participants with no prosthetic complications. Patients were selected so that the mean post-operative times were comparable (4years +/- 2months). Serum samples were collected and quantitatively assayed by enzyme linked immunosorbent assay (ELISA) for bone alkaline phosphatase (BAP), pro-collagen type I c-terminal peptide (PICP), osteoprotegerin (OPG), and parathyroid hormone (PTH). This data was then compared to the presence of loosening as assessed intra-operatively, lifestyle factors, and degree of loosening measured radiographically. A ten point radiographic scale was used to assess the severity of component loosening (Table 1). RESULTS SECTION: There were no statistical differences between the two groups in terms of BMI (p=1.00) or gender (p=0.910), though patients undergoing revision were significantly younger (p<0.001) than patients with well-functioning implants. In radiographic analysis, the experimental group exhibited significantly more total radiographic findings of component loosening (4/10) as compared to the control group (0.9/10) (p<0.001). Patients with well-functioning implants demonstrated higher levels of BAP (1.05 ng/mL vs. 0.91 ng/mL), PICP (0.47 ng/mL vs. 0.45 ng/mL) and PTH (69.67 ng/mL vs. 42.8 pg/mL), but lower OPG (23.6 pg/mL vs. 31.1 pg/mL), though these differences were not statistically significant. Serum biomarker levels did not correlate with radiographic parameters or intra-operative findings of loosening. DISCUSSION: As component loosening remains a common cause for revision shoulder arthroplasty in patients without infection, a panel of biomarkers focused on bone metabolism could provide prognostic information to physicians. Patients with well-functioning implants tended to have higher levels of markers associated with bone anabolism, though these findings did not correlate with radiographic observations and failed to achieve significance. Our group is currently incorporating additional circulating markers that are indicative of bone catabolism, such as tartrate-resistant acid phosphatase-5b (TRAP-5b) and crosslinked c-terminal and n-terminal peptides of type I collagen (CTX-I, NTX-1). (Table presented).

Sokhandon F, Al-katib S, Bahoura L, Copelan A, George D and Scola D (2017). "Multidetector CT enterography of focal small bowel lesions: a radiological–pathological correlation." *Abdominal Radiology* 42(5): 1319-1341.

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Department of Diagnostic Radiology and Molecular Imaging

Focal small bowel lesions present a diagnostic challenge for both the radiologist and gastroenterologist. Both the detection and characterization of small bowel masses have greatly improved with the advent of multidetector CT enterography (MD-CTE). As such, MD-CTE is increasingly utilized in the workup of occult gastrointestinal bleeding. In this article, we review the spectrum of focal small bowel masses with pathologic correlation. Adenocarcinoma, the most common primary small bowel malignancy, presents as a focal irregular mass occasionally with circumferential extension leading to obstruction. Small bowel carcinoid tumors most commonly arise in the ileum and are characterized by avid enhancement and marked desmoplastic response of metastatic lesions. Aneurysmal dilatation of small bowel is pathognomonic for lymphoma and secondary findings of lymphadenopathy and splenomegaly should be sought. Benign small bowel masses such as leiomyoma and adenoma may be responsible for occult gastrointestinal bleeding. However, primary vascular lesions of the small bowel remain the most common cause for occult small bowel gastrointestinal bleeding. The arterial phase of contrast obtained with CTE aids in recognition of the vascular nature of these lesions. Systemic conditions such as Peutz–Jeghers syndrome and Crohn’s disease may be suggested by the presence of multiple small bowel lesions. Lastly, potential pitfalls such as ingested material should be considered when faced with focal small bowel masses.

Sridhar J, Yonekawa Y, Kuriyan AE, Joseph A, Thomas BJ, Liang MC, Rayess N, Relhan N, **Wolfe JD**, Shah CP, Witkin AJ, Flynn HW and Garg SJ (2017). "Microbiologic spectrum and visual outcomes of acute-onset endophthalmitis undergoing therapeutic pars plana vitrectomy." Retina 37(7): 1246-1251.

[Full-Text](#)

Department of Ophthalmology

Purpose: To report the clinical presentation, microbiologic spectrum, and visual outcomes associated with acute-onset infectious endophthalmitis undergoing therapeutic pars plana vitrectomy. Methods: Multicenter interventional retrospective noncomparative consecutive case series. Billing records were reviewed to identify all charts for patients undergoing pars plana vitrectomy within 14 days of diagnosis of acute-onset infectious endophthalmitis over a 4-year period at 5 large tertiary referral retina practices. Statistical analysis was performed to assess for factors associated with visual outcomes. Results: Seventy patients were identified. The most common clinical setting was postcataract surgery (n = 20). Only 3 patients (4.3%) presented with 20/400 or better visual acuity (VA). Although most of the patients initially underwent vitreous tap and intravitreal antibiotic injection (n = 47, 67.1%), all patients eventually underwent pars plana vitrectomy within 14 days of presentation with 68.5% (48/70) of patients undergoing pars plana vitrectomy within 48 hours of presentation. Positive intraocular cultures were obtained in 56 patients (80%). The most common identified organism was Streptococcus sp (n = 19). Visual acuity at last follow-up was 20/400 or better in 19 patients (27.1%). Three patients underwent evisceration or enucleation (4.3%). Last recorded postoperative VA (mean LogMAR 1.99 ± 0.94, Snellen VA equivalent finger count) improved from presenting VA (mean LogMAR 2.37 ± 0.38, Snellen VA hand motions) (P ≤ 0.001). There was no statistically significant correlation between the underlying etiology or the timing of surgery with this VA outcome. Conclusion: Although less than one-third of patients achieved 20/400 or better VA, this VA often improved significantly from presenting VA.

Stem MS, Todorich B and **Faia LJ** (2017). "Ocular pharmacology for scleritis: Review of treatment and a practical perspective." Journal of Ocular Pharmacology and Therapeutics 33(4): 240-246.

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Department of Ophthalmology

Scleritis is defined as an infectious or noninfectious inflammation of the sclera that can be broadly categorized according to anatomic location (ie, anterior or posterior) and whether the process is necrotizing or non-necrotizing. Treatment for scleritis is dictated by the etiology of the inflammation, with infectious forms requiring treatment of the inciting agent and noninfectious forms requiring treatment of the underlying inflammation with immunosuppression. Pharmacotherapy for noninfectious scleritis can be classified according to delivery route (eg, local or systemic) and mechanism of action (eg, biologic or nonbiologic). This review will briefly summarize the classification scheme for scleritis before reviewing in depth both systemic and local pharmacotherapies that can be used to effectively treat an eye afflicted by either infectious or noninfectious scleritis. Traditional anti-inflammatory agents such as nonsteroidal anti-inflammatory drugs, steroids, and immunomodulatory therapy will be discussed, as well as newer biologic therapies such as antitumor necrosis factor alpha and anti-CD20 agents.

Stoner A, **Boudouris W** and Pierce R (2017). "A rare case of paraneoplastic chorea." Neurology 88(16):P2.023

[Request Form](#)

Department of Neurology

Objective: To report P/Q type voltage gated calcium channel (VGCC) antibodies as a rare cause of paraneoplastic chorea. Background: The underlying cause of choreiform movements is challenging to diagnose because of chorea's vast differential. Paraneoplastic disorders are an established but rare etiology of chorea. Antibodies typically associated with the disease are limited to anti-CRMP5, anti-Hu, anti-Yo, anti-ANNA, and anti-NMDA; one case associated with P/Q type VGCC was recently reported. Design/Methods: Case report of a patient seen at an urban academic medical center. Results: A 72-year-old Caucasian female with a history of remote breast cancer presented with abrupt onset, generalized, hyperkinetic movements. The patient denied recent medication changes or neuroleptic use. Neurologic exam was normal except for left>right chorea-athetotic movements. The patient underwent an extensive workup including brain MRI

with and without contrast, EEG, CSF analysis, antistreptolysin O, serum/urine copper, ceruloplasmin, thyroperoxidase antibody, rapid plasma reagin, and vitamin B12 levels. Results were unremarkable. Psychiatric evaluation was benign. The patient's movements did not improve with trials of diphenhydramine or risperdone. Although the patient's chest x-ray was documented as unchanged from a study earlier in the year, chest CT revealed a left superior mediastinal soft tissue mass and upper lobe lung nodule. A biopsy of the left mediastinal mass confirmed the diagnosis of small cell lung cancer. Dexamethasone and chemotherapy results were initiated and the patient's choreiform movements nearly resolved within 48 hours. A paraneoplastic panel was drawn and the patient was ultimately found to test positive for serum antibodies against P/Q type VGCC. Conclusions: In conjunction with one other case reported elsewhere, these findings demonstrate that P/Q type VGCC antibodies may need to be considered in the differential work-up for chorea.

Sukul D, Seth M, Schreiber T, **Hanzel G**, Khandelwal A, Cannon LA, Lalonde TA and Gurm HS (2017). "The comparative safety of abciximab versus eptifibatide in patients on dialysis undergoing percutaneous coronary intervention: Insights from the Blue Cross Blue Shield of Michigan Cardiovascular Consortium (BMC2)." Journal of Interventional Cardiology 30(4): 291-300.

[Full-Text](#)

Department of Internal Medicine

Objectives: We sought to evaluate the patterns of use and outcomes associated with eptifibatide and abciximab administration among dialysis patients who underwent percutaneous coronary intervention (PCI). **Background:** Contraindicated medications are frequently administered to dialysis patients undergoing PCI often resulting in adverse outcomes. Eptifibatide is a glycoprotein IIb/IIIa inhibitor that is often used during PCI and is contraindicated in dialysis. **Methods:** We included dialysis patients who underwent PCI from January 2010 to September 2015 at 47 hospitals in Michigan. We compared outcomes between patients who received eptifibatide compared with abciximab. Both groups required concurrent treatment with unfractionated heparin only. In-hospital outcomes included repeat PCI, bleeding, major bleeding, need for transfusion, and death. Optimal full matching was used to adjust for non-random drug administration. **Results:** Of 177 963 patients who underwent PCI, 4303 (2.4%) were on dialysis. Among those, 384 (8.9%) received eptifibatide and 100 (2.3%) received abciximab. Prior to matching, patients who received eptifibatide had higher pre-procedural hemoglobin levels (11.3 g/dL vs. 10.7 g/dL; $P < 0.001$) and less frequently had a history of myocardial infarction (36.5% vs. 52.0%; $P = 0.005$). After matching, there were no significant differences in in-hospital outcomes between eptifibatide and abciximab including transfusion (aOR: 1.15; 95%CI: 0.55-2.40; $P = 0.70$), bleeding (1.47; 0.64-3.40; $P = 0.36$), major bleeding (4.68; 0.42-52.3; $P = 0.21$), repeat PCI (0.38; 0.03-4.23; $P = 0.43$), and death (1.53; 0.2-9.05; $P = 0.64$). **Conclusions:** Despite being contraindicated in dialysis, eptifibatide was used approximately 3.5 times more frequently than abciximab among dialysis patients undergoing PCI but was associated with similar in-hospital outcomes. © 2017, Wiley Periodicals, Inc.

Taffel MT, Nikolaidis P, Beland MD, Blaufox MD, Dogra VS, Goldfarb S, Gore JL, Harvin HJ, Heilbrun ME, Heller MT, Khatri G, Preminger GM, Purysko AS, Smith AD, Wang ZJ, **Weinfeld RM**, Wong-You-Cheong JJ, Remer EM and Lockhart ME (2017). "ACR Appropriateness Criteria® renal transplant dysfunction." Journal of the American College of Radiology 14(Sup 5): S272-S281.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Renal transplantation is the treatment of choice in patients with end-stage renal disease because the 5-year survival rates range from 72% to 99%. Although graft survival has improved secondary to the introduction of newer immunosuppression drugs and the advancements in surgical technique, various complications still occur. Ultrasound is the first-line imaging modality for the evaluation of renal transplants in the immediate postoperative period and for long-term follow-up. In addition to depicting many of the potential complications of renal transplantation, ultrasound can also guide therapeutic interventions. Nuclear medicine studies, CT, and MRI are often helpful as complementary examinations for specific indications. Angiography remains the reference standard for vascular complications and is utilized to guide nonsurgical

intervention. The American College of Radiology Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed annually by a multidisciplinary expert panel. The guideline development and revision include an extensive analysis of current medical literature from peer-reviewed journals and the application of well-established methodologies (RAND/UCLA Appropriateness Method and Grading of Recommendations Assessment, Development, and Evaluation or GRADE) to rate the appropriateness of imaging and treatment procedures for specific clinical scenarios. In those instances where evidence is lacking or equivocal, expert opinion may supplement the available evidence to recommend imaging or treatment.

Tantisattamo E (2017). "Obesity and weight loss during pre-kidney transplant period." [American Journal of Kidney Diseases](#) 69(4): A96.

[Full-Text](#)

Department of Internal Medicine

Tantisattamo E (2017). "Obesity and weight loss pre-kidney transplantation." [FASEB Journal](#) 31(1): 643.613.

[Full-Text](#)

Department of Internal Medicine

Background: Weight loss in obese patients is generally required to become eligible for kidney transplantation; however, but followed-up data pre-transplantation is limited. Methods: Kidney transplant recipients in 2015 were consecutively reviewed. Weight, height, and BMI were obtained at the time of kidney transplantation and yearly up to 6 years pre-transplantation. Results: A total of 70 patients were included. Mean age was 52.7 ± 1.4 years (mean \pm SEM) and 41 patients were male (58.6%). Mean weight at the time of transplant was 81.22 ± 2.28 kg (42-132.3) and BMI was 27.64 ± 0.67 kg/m² (16.6-48.3) kg/m². The majority of the patients (38.6%) were overweight and 1/3 were obese (BMI \geq 30 kg/m²). The remaining had normal weight. All patients had \geq 1-measured weight at 1-year pre-transplantation and the followed-up weight ranged 1-6 years pre-kidney transplantation. Compared to non-obese patients, obese patients appeared to lose more weight ranging from 4.47 kg at 1-y pre-transplant to 23.62 kg at 6-year pre-transplantation with statistical significance at 2, 3, 5, and 6 years pre-transplantation ($p=0.0001, 0.0062, 0.0020, \text{ and } 0.0154$, respectively; Figure 1). In obese patients with weight loss, mean weight change (Δ Wt = weight at the time of transplant - weight at 1 to 6 years pre-transplant; $-\Delta$ Wt) trended to decrease from 6-through 1-year pre-transplantation indicating progressive weight loss toward the time of kidney transplantation. Similarly, obese patients with weight gain trended to have decrease in mean weight change ($+\Delta$ Wt) during follow up from 6-year pre-transplant toward the time of transplantation (Figure 2). Conclusions: During pre-kidney transplant waiting time, obese patients trend to lose more weight than non-obese patients. Additionally, more weight loss or less weight gain in obese patients who losing and gaining weight, respectively were progressive toward the time of kidney transplantation. Therefore, obesity should not automatically exclude the patients from becoming kidney transplant candidates.

Tantisattamo E (2017). "Potential blood pressure control from weight loss after kidney transplantation." [American Journal of Kidney Diseases](#) 69(4): A97.

[Full-Text](#)

Department of Internal Medicine

Taylor R, Burk C, Sugiyama N, Friedman P and Ogunyemi D (2017). "Utility of intrapartum fetal heart rate monitoring in a contemporary labor and delivery unit." [Obstetrics and Gynecology](#) 129(Sup): 174S.

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Department of Physical Medicine and Rehabilitation

OUWB Medical Student Author

Department of Obstetrics and Gynecology

INTRODUCTION: To evaluate the use of intrapartum electronic fetal heart rate monitoring (EFM) as a screening tool for adverse neonatal outcomes. METHODS: This is a retrospective study of 16,980 term, singleton deliveries at a single hospital from 2013-2014. Cases of adverse neonatal outcomes were

compared to unaffected controls by the following predictor variables: late, variable, early, and prolonged decelerations; accelerations; tachycardia; bradycardia; and minimal variability. The primary outcome was a composite adverse outcome comprised of five-minute Apgar score less than 4, umbilical arterial pH less than 7.0, sepsis, seizures, encephalopathy, and respiratory failure. Secondary outcomes were neonatal intensive care unit (NICU) admission, hypoxia, hypoglycemia, pH less than 7.0, seizures, and abstinence syndrome. Independent associations were ascertained using logistic regression. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) were calculated for significant parameters. RESULTS: For the composite adverse outcome, prolonged decelerations were positively (OR 2.19) and accelerations were negatively (OR 0.044) associated. For NICU admission, associations included prolonged (OR 1.24) and late (OR 1.39) decelerations, minimal variability (OR 1.17), and tachycardia (OR 1.81). Neonatal hypoxia (OR 0.076), hypoglycemia (OR 0.21) and seizures (OR 0.005) were all negatively associated with accelerations. Low five-minute Apgar score was positively associated with prolonged decelerations (OR 8.69). For the composite adverse outcome, prolonged decelerations had sensitivity, specificity, PPV, and NPV of 0.372, 0.657, 0.00606, and 0.995, while for absence of accelerations were 0.0185, 0.998, 0.0357, and 0.996, respectively. CONCLUSION: Standard EFM parameters have excellent NPV but poor PPV when used intrapartum to screen for adverse neonatal outcomes.

Thanos A, **Faia LJ** and **Randhawa S** (2017). "Optical coherence tomography angiography: Potential artifacts in acute macular neuroretinopathy reply (Letter)." *JAMA Ophthalmology* 135(6): 675-676.

[Full-Text](#)

Department of Ophthalmology

Thanos A, Todorich B, Yonekawa Y, Papakostas TD, Khundkar T, Elliott D, Dass AB, **Williams GA**, **Capone A, Jr.**, **Faia LJ**, **Wolfe JD**, Hassan TS and **Ruby AJ** (2017). "Dexamethasone intravitreal implant for the treatment of recalcitrant macular edema after rhegmatogenous retinal detachment repair." *Retina*. ePub Ahead of Print.

[Full-Text](#)

Department of Ophthalmology

PURPOSE:: To investigate the efficacy of the intravitreal dexamethasone implant as the treatment for recalcitrant macular edema after successful rhegmatogenous retinal detachment repair. METHODS:: A retrospective review of the medical records was performed on 17 consecutive patients (17 eyes) with recalcitrant macular edema associated with rhegmatogenous retinal detachment repair who were treated with a single or multiple injections of an intravitreal dexamethasone 0.7-mg implant (Ozurdex; Allergan Inc) at two centers. Main outcomes of the study were change in logarithm of the minimum angle of resolution visual acuity, measurement of central foveal thickness, and macular cube volume as measured by spectral domain optical coherence tomography and frequency of complications. RESULTS:: The mean age was 67 years (range, 51–78 years). All 17 patients received previous topical therapy and 12 of them had previous administration of intravitreal triamcinolone with persistence of macular edema. Baseline mean best-corrected visual acuity was 20/100 (logarithm of the minimum angle of resolution 0.75; range, 0.18–1.3 ±0.37) in the affected eyes. There was a statistically significant improvement in best-corrected visual acuity at 1 month ($P < 0.001$) and 3 months ($P = 0.01$). Mean baseline central foveal thickness was 505 μm , and mean macular cube volume was 10.62 mm. There was a statistically significant decrease in central foveal thickness and macular cube volume at 1 month (505–290 μm , $P = 0.013$ and 10.62–9.13 mm, $P < 0.0001$) and 3 months ($P = 0.01$). All patients developed recurrence of macular edema at 3 months, which required retreatment. The average number of implants was 4 (range, 1–14). No adverse effects such as retinal detachment or endophthalmitis occurred. Two patients experienced an increase in intraocular pressure that was controlled with topical therapy. CONCLUSION:: Macular edema that occurs in eyes after successful repair of rhegmatogenous retinal detachment can be chronic and recalcitrant, and may be successfully and safely treated with the dexamethasone intravitreal implant. © 2017 by Ophthalmic Communications Society, Inc.

Thapar K, Karabon P and **Smith M** (2017). "Utility and application of laboratory consultation for antiphospholipid antibody testing: the William Beaumont hospital experience." International Journal of Laboratory Hematology 39(Sup 1): 116.

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OUWB Medical Student Author

Department of Pathology

Todorich B, Thanos A, Yonekawa Y, Mane G, Hasbrook M, Thomas BJ, Woodward MA, **Williams GA, Capone A, Jr., Wolfe JD, Faia LJ** and Hassan TS (2017). "Simultaneous dexamethasone intravitreal implant and anti-VEGF therapy for neovascular age-related macular degeneration resistant to anti-VEGF monotherapy." Journal of Vitreoretinal Diseases 1(1): 65-74.

[Request Form](#)

Department of Ophthalmology

PURPOSE: To evaluate the efficacy of a dexamethasone intravitreal implant in combination with intravitreal anti-VEGF agents for treatment resistant neovascular age-related macular degeneration (nvAMD).
METHODS: This study was designed as a single-center, retrospective interventional case series. Consecutive patients with treatment-resistant nvAMD underwent simultaneous combined injection of anti-VEGF agent and dexamethasone intravitreal implant. Eighteen patients with mean age of 81.5 years were included. Patients received average of 26.3 anti-VEGF injections before dual therapy, with mean follow up of 8.2 months after dual therapy. **RESULTS:** Dual therapy produced a significant mean decrease in CFT (126.3 μm), compared to a mean increase of 29.9 μm when treated with anti-VEGF monotherapy ($p=0.0017$). Patients also had mean decrease in MCV of -0.85 mm^3 with dual therapy compared with anti-VEGF monotherapy ($p=0.0014$). There was a moderate correlation between the number of prior anti-VEGF injections and the magnitude of anatomic response, suggesting that shorter disease duration may positively influence response to combined treatment. Although there was a slight trend towards improved mean visual acuity after dual therapy, these differences did not reach statistical significance. Nevertheless, with combination treatment, 33% of patients gained one or more lines of vision. Dual therapy resulted in a significantly lower number of required anti-VEGF injections (4.25 vs 5.33) and an increase of the anti-VEGF injection-free interval to 1.41 months from 1.12 months during the 6 months following dual therapy compared to the same interval before dual therapy. Dual therapy was well tolerated; two eyes developed mild IOP elevation effectively managed with topical therapy and one patient developed worsening cataract. **CONCLUSIONS:** Combined treatment of anti-VEGF with the dexamethasone intravitreal implant is a viable alternative for treatment-resistant nvAMD, and may reduce treatment burden. Earlier treatment with dual therapy may be beneficial to maximize anatomic and visual outcomes in these patients.

Todorich B, Thanos A, Yonekawa Y, Thomas BJ, **Faia LJ**, Chang E, Shulman J, Olsen KR, Blair MP, Shapiro MP, Ferrone P, Vajzovic L, Toth CA, Lee TC, Robinson J, Hubbard B, Kondo H, Besirli CG, Nudleman E, Wong SC, Kusaka S, Walsh M, Chan RVP, Berrocal A, Caputo G, Murray TG, Sears J, Schunemann R, Harper CA, Kychental A, Dorta P, Cernichiaro-Espinosa LA, Wu WC, Campbell JP, Martinez-Castellanos MA, Quiroz-Mercado H, Hayashi H, Quiram P, Amphornphruet A, Hartnett ME, Tsui I, Ells A, John V, Moshfeghi D, **Capone A, Drenser KA** and **Trese MT** (2017). "To the editor." Retina 37(5): e52-e54.

[Full-Text](#)

Department of Ophthalmology

Tooley TR, Ahmed M, Helland L, **Dykowski S** and **Barremkala M** (2017). "The use of softchalk modules to prepare first year medical students for upper limb cadaver dissections." FASEB Journal 31(1): 580.581.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

INTRODUCTION Anatomical science is a staple of medical school education and, in many programs, the first foundational training students receive. At OUWB School of Medicine, students learn anatomy from two main components: didactic lectures and cadaver dissection. The lectures focus on function and clinical correlates,

while the dissections enable students to learn anatomy in-situ. While cadavers are considered the gold standard for anatomical sciences, a multi-modal approach to learning is becoming the norm. Many schools use computer-based-learning, virtual dissectors, and models in addition to or instead of traditional dissection. While these resources are useful, they are inefficient and often misaligned with specific course content. This project is designed to create a series of Softchalk modules that align with course content and enhance the laboratory learning experience. METHODS First year medical students (n=126) in the Anatomical Foundations of Clinical Practice 1 course were selected for the study. Online modules were designed using Softchalk software. Each module expanded upon information in the students' cadaver dissector guide and integrated key elements from lectures. Each module used images, descriptive text, and interactive activities to help students better prepare for gross dissection. Students received modules for 2 of 4 upper limb dissections. For weeks without a module (2), students followed their normal routines. Following the unit, a survey was sent out to assess the perceptions of the optional Softchalk modules. Likert scale questions (19 questions, scored 0-100, strongly disagree-strongly agree) were used to evaluate the amount of time spent on the module, usefulness, and comparison to the gross dissector guide. RESULTS A total of 43 surveys (34%) have been recorded. All participants were first year students, average age 23±1.4 years old. The majority were Caucasian (61%), female (65%), with no anatomy background (56%). For initial analysis we focused on questions testing time-to-completion and feelings of preparedness for gross dissection. Spearman correlations found no relationship between average time spent in minutes (31.2±15) and a question asking if the modules took an "appropriate amount of time" (avg. score=72/100). There was a weak correlation (R=0.43) between two questions testing feelings of preparedness and using modules for all dissections. A t-test comparing the use of 1 module versus 2 modules found no significant change in any question response. When asked if modules increased understanding of the course content, respondents agreed (avg. score=79/100). While the data is premature, these modules could benefit medical student gross dissection learning. CONCLUSION While data analysis is ongoing (December 2016), initial results indicate that the Softchalk modules were a positive experience for first year students and was helpful with dissection preparation. It was not perceived as a significant time burden by students. This pilot study shows opportunity for future, quantitative studies (impact vs. perception) as well as studies with modules for more than just the upper limb unit.

Topf JM, Sparks MA, Phelan PJ, **Shah N**, Lerma EV, Graham-Brown MPM, Madariaga H, Iannuzzella F, Rheault MN, Oates T, Jhaveri KD and Hiremath S (2017). "The evolution of the journal club: From Osler to twitter." [American Journal of Kidney Diseases](#) 69(6): 827-836.

[Full-Text](#)

Department of Internal Medicine

Journal clubs have typically been held within the walls of academic institutions and in medicine have served the dual purpose of fostering critical appraisal of literature and disseminating new findings. In the last decade and especially the last few years, online and virtual journal clubs have been started and are flourishing, especially those harnessing the advantages of social media tools and customs. This article reviews the history and recent innovations of journal clubs. In addition, the authors describe their experience developing and implementing NephJC, an online nephrology journal club conducted on Twitter. (C) 2017 by the National Kidney Foundation, Inc.

Vakharia P, Chopra R, Sacotte R, Patel N, Immaneni S, Kantor R, Hsu D and Silverberg J (2017). "Adult-onset atopic dermatitis is associated with a distinct phenotype." [Journal of Investigative Dermatology](#) 137(Sup 1): S66.

[Full-Text](#)

OUWB Medical Student Author

Vakharia P, Chopra R and Silverberg J (2017). "Standardizing the diagnostic criteria used for atopic dermatitis: A systematic review." [Journal of Investigative Dermatology](#) 137(Sup 1): S66.

[Full-Text](#)

OUWB Medical Student Author

Vakharia PP, Chopra R and Silverberg JI (2017). "Systematic review of diagnostic criteria used in atopic dermatitis randomized controlled trials." [American Journal of Clinical Dermatology](#). ePub Ahead of Print.

[Request Form](#)

OUIB Medical Student Author

BACKGROUND: Numerous diagnostic criteria for atopic dermatitis are used in clinical trials, which may limit comparison of results. OBJECTIVE: We sought to determine the most commonly used atopic dermatitis diagnostic criteria in randomized controlled trials internationally. METHODS: We performed a systematic review of randomized controlled trials with a pharmacological intervention from 2007 to 2016. Cochrane Library, EMBASE, GREAT, LILACS, MEDLINE, and Scopus were searched. Two authors independently performed the study selection and data extraction. RESULTS: Two hundred and twelve randomized controlled trials met inclusion/exclusion criteria. Overall, ten different diagnostic criteria were used. The Hanifin and Rajka criteria were most commonly used (41.0%), followed by the UK refinement of the Hanifin and Rajka criteria (9.0%), Japanese Dermatological Association criteria (4.2%), and American Academy of Dermatology criteria (3.8%). No diagnostic criteria were specified in 37.3% of randomized controlled trials. The Hanifin and Rajka criteria were the most commonly used atopic dermatitis diagnostic criteria in clinical trials of topical and systemic interventions, across all years between 2007 and 2016, in pediatric and adult populations, in most countries and regions internationally. CONCLUSIONS: The results highlight the lack of uniformity and documentation of atopic dermatitis diagnostic criteria in randomized controlled trials for atopic dermatitis. We recommend harmonizing the diagnostic criteria for atopic dermatitis in future randomized controlled trials.

Vakharia PP, Kakish D, Tadros R and Riutta J (2017). "Bibliometric analysis of breast cancer-related lymphoedema research published from 2007-2016." [Journal of Lymphoedema](#) 12(1): 16-18.

[Request Form](#)

OUIB Medical Student Author

Department of Physical Medicine and Rehabilitation

Background: Breast cancer-related lymphoedema (BCRL) has been a poorly-researched topic; however, research productivity related to BCRL has increased within the last decade. Aims: Conduct a bibliometric analysis to characterise recent BCRL research. Methods: A search for indexed English abstracts was performed in PubMed using search terms of ("lymphoedema"[tiab] OR "lymphoedema"[tiab]) AND "breast cancer"[tiab] from 2007-2016. Inclusion criteria were original research articles involving human subjects. Results: A total of 1,144 publications were identified, of which 570 met the inclusion criteria. The highest proportions of articles were published in 2015 and 2016. The breakdown of lymphoedema study purposes were as follows: diagnostic/educational (35.5%), treatment (30.2%), risk/risk factor (25.3%), prevention (9%). The USA (32.8%), Australia (9.6%), South Korea (6.7%), the United Kingdom (5.3%), China (3.7%) and Turkey (3.7%) produced the most BCRL research. Eight of the top 10 BCRL research institutions are in the USA, with the remaining two in Australia. Conclusions: Breast cancer-related lymphoedema research is predominantly being carried out in upper-middle- and high- income countries. In these developed countries, providers are beginning to focus on quality of life-impairing aspects of breast cancer. It is important to identify BCRL research to highlight the need for research support.

Vakharia PP, Nardone B, Schlosser BJ, Lee D, Serrano L and West DP (2017). "Chronic exposure to tetracyclines and subsequent diagnosis for non-melanoma skin cancer in a large Midwestern U.S. patient population." [Journal of the European Academy of Dermatology and Venereology](#). ePub Ahead of Print.

[Full-Text](#)

OUIB Medical Student Author

Vakharia PP, Orrell KA, Lee D, Rangel SM, Lund E, Laumann AE, West DP and Nardone B (2017). "Apremilast and suicidality - a retrospective analysis of three large databases: the FAERS, EudraVigilance and a large single-centre US patient population." [Journal of the European Academy of Dermatology and Venereology](#). ePub Ahead of Print.

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OUIB Medical Student Author

Villafuerte-Gonzalez R, Valadez-Jimenez VM, Sierra-Ramirez JA, **Ysunza PA**, Chavarria-Villafuerte K and Hernandez-Lopez X (2017). "Acoustic analysis and electroglottography in elite vocal performers." *Journal of Voice* 31(3): 391.e391-391.e396.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Background: Acoustic analysis of voice (AAV) and electroglottography (EGG) have been used for assessing vocal quality in patients with voice disorders. The effectiveness of these procedures for detecting mild disturbances in vocal quality in elite vocal performers has been controversial. Objective: To compare acoustic parameters obtained by AAV and EGG before and after vocal training to determine the effectiveness of these procedures for detecting vocal improvements in elite vocal performers. Materials and Methods: Thirty-three elite vocal performers were studied. The study group included 14 males and 19 females, ages 18-40 years, without a history of voice disorders. Acoustic parameters were obtained through AAV and EGG before and after vocal training using the Linklater method. Results: Nonsignificant differences ($P > 0.05$) were found between values of fundamental frequency (F 0), shimmer, and jitter obtained by both procedures before vocal training. Mean F 0 was similar after vocal training. Jitter percentage as measured by AAV showed nonsignificant differences ($P > 0.05$) before and after vocal training. Shimmer percentage as measured by AAV demonstrated a significant reduction ($P < 0.05$) after vocal training. As measured by EGG after vocal training, shimmer and jitter were significantly reduced ($P < 0.05$); open quotient was significantly increased ($P < 0.05$); and irregularity was significantly reduced ($P < 0.05$). Conclusions: AAV and EGG were effective for detecting improvements in vocal function after vocal training in male and female elite vocal performers undergoing vocal training. EGG demonstrated better efficacy for detecting improvements and provided additional parameters as compared to AAV.

Wagner TH, Scott JY, Newman DK, Miller JM, Kirk K, DiCamillo MA, Raghunathan TE, **Diokno AC** and Sampselle CM (2017). "Costs and sustainability of a behavioral intervention for urinary incontinence prevention." *Urology Practice*. ePub Ahead of Print.

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Department of Urology

Walker Z, Duncan A, Bellomo T, Budd K, Polina A, **Hafron J** and Banes-Berceli A (2017). "Comparison study of the effects of zerumbone and AG490 in human renal cell carcinoma on the activation of the janus kinase pathway and cell survival." *FASEB Journal* 31(1): 671.674.

[Full-Text](#)

Department of Urology

In the United States, Renal Cell Carcinoma (RCC) accounts for 9 out of 10 cases of kidney cancer. Approximately 33% of the patients present with metastatic disease and of those initially treated by surgical resection 40-50% will develop recurrent metastatic disease. 13,860 people are estimated to die from RCC in 2016 due to poor responsiveness to the current chemotherapy medications. Development of new therapies is limited because the molecular mechanisms of RCC and the chemoresistance are poorly understood. However, we and others have shown that alterations in the levels of the Janus Kinase (JAK2) and Signal transducers of activators of transcription (STAT) pathway may be involved as it has been implicated in invasiveness and cell survival in RCC cell lines. We hypothesize that altered activation of the JAK/STAT/SHP-1 pathway contributes to the development of RCC and the chemoresistance observed. To test this hypothesis we used the RCC cell line (ATCC) and we treated the cells for 24 hours with the JAK2 inhibitor AG490 and sunitinib (standard chemotherapy agent) alone and in combination. After 24 hrs we found a 20% decrease in cell viability in the AG490 treated cells but not in the sunitinib treated cells. Combination of AG490 and sunitinib for 24 hrs resulted in a 40% decrease in cell viability. We also treated cells for 24, and 48 hrs with AG490 to directly inhibit JAK2 and with zerumbone, an inducer of SHP-1 activity, which will indirectly decrease JAK2 phosphorylation and activation. At 24 hrs we found significant decreases in JAK2 phosphorylation levels with both and almost undetectable levels by 48 hrs. The STAT1 and STAT3 levels were only decreased significantly after 48 hrs of treatment with both zerumbone and AG490. We also treated cells

with these inhibitors and measured cell viability for 24, 48, 72 and 96 hrs. We found an 80% reduction in cell viability at 96 hrs of treatment with both the zerumbone and AG490. These data suggest that inhibition of JAK2 is a viable clinical target for future therapy as it enhanced the response to sunitinib as well as decreased cell viability on its own.

Ward A, Awad SS, **Merson R** and Rolnickl M (2017). "Improvements to android-based real-time treatment of speech-language pathologies." 71-76.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

This paper presents improvements upon a previous paper detailing an Android mobile phone application demonstrating methods for implementing or assisting traditional speech therapy techniques using mobile devices. [1] After development, the software was implemented on a Galaxy Tab, an Android tablet that, at approximately \$100 per tablet, is quite affordable. The techniques are principally aimed at treating Parkinsons- disease induced hypophonia and habit-induced hyperphonia, but are applicable to other speech or language disorders, particularly vocal projection issues. This paper will present practical obstacles in developing the application and their solutions, feedback from medical testing, and practical improvements to the device setup itself. In particular, it focuses on improvements to the device's user interface, physical noise reduction in mobile devices, and the implementation and altered-Audio-feedback on an Android device. It was found that using a single type of device with pre-set parameters for certain tasks was more effective than allowing medical technicians, who may be unfamiliar with the technology, to calibrate the software to different types of devices. Additionally, the use of throat microphones will be tested to reduce noise and enable more effective treatment. © 2016 IEEE.

Werede A and **Thompson B** (2017). "Perception of body donation among African Americans." FASEB Journal 31(1): 733.733.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

INTRODUCTION The use of cadavers for anatomical studies has long been an important component of medical education. To supply the needed cadavers, most medical schools rely on people donating their bodies upon death. Very few studies examining the demographics of body donors exist and they indicate that the majority of donors tend to be Caucasian males, leading to a lack of racial diversity among cadavers in the anatomy lab. The goal of this study is to understand why minorities, more specifically African Americans, do not participate in whole body donation programs. Understanding factors or obstacles that play a role in influencing willingness to partake in body donation may aid in developing interventions that facilitate involvement amongst this demographic. **METHODS** Ongoing studies are examining attitudes, knowledge and cultural beliefs that may influence willingness of African Americans to participate in whole body donation programs. Ten focus groups, each consisting of 5 to 7 people, will be conducted at local Optimist Clubs in the Metro Detroit Area. At each meeting, demographic data regarding gender, age group, education level, income level, marital status, and number of dependents will be gathered prior to researcher-led discussions on views about body donation. **ANTICIPATED RESULTS** We hypothesize that the low participation rates of African Americans in whole body donation programs are due a combination of factors including a mistrust of the medical profession, lack of awareness of donation programs, and religious or cultural beliefs surrounding death and the disposition of the body. **CONCLUSION** The results are expected to help us understand African American beliefs surrounding whole body donation.

Williams GA (2017). "How the AAO helped stop a Washington disaster: Two seemingly contradictory proposals shelved as a result of AAO action." Retina Today 2017(JUNE): 23-24.

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Department of Ophthalmology

Williams GA (2017). "Surgical viewing; Do you see what I see?" Retina 37(7): 1219.

[Full-Text](#)

Department of Ophthalmology

Wirtu AT, Geneti SA, Georgis STH and **Gemechu JM** (2017). "Neuroanatomical variants of clinical importance in the population of Ethiopia." FASEB Journal 31(1): 748.710.

[Full-Text](#)

Department of Biomedical Sciences (OU)

The causes of neuroanatomical variations are yet unknown despite understanding their presence will have significant impact in improving medicolegal issues, diagnostics, imaging and therapeutics in the future. Neuroanatomical variations in the branching patterns of the brachial plexus and sciatic nerve have been reported in several populations but rarely in Ethiopia. After an ethical approval by the institutions involved, twenty-four bodies were examined in both sexes in accordance with the guidelines of Grant's dissection principle and Cunningham's manual of practical anatomy in sampled governmental and private Schools of Medicine in Ethiopia. Critical observation, careful dissection and imaging were done accordingly. We found anteriorly communicating fibers of musculocutaneous and median nerve in (6.3%), posteriorly communicating fibers of ulnar with radial nerve in (2.1%) and higher pelvic division of anterior and posterior fibers of sciatic nerve in (6.3%) of Ethiopians. Identification of these variants will help the neurologists to make a proper diagnosis of sensorimotor symptoms and of considerable significance to surgeons and orthopaedicians when dealing with patients of neural entrapment syndromes, posttraumatic evaluations and exploratory interventions. Altogether, the findings show the existence of neuroanatomical variants of clinical importance that needs special consideration in the treatment and diagnosis of this diversified population of diverse genetic and geographical origins, which also was assumed as the cradle of mankind.

Wright JO, **Baker EA**, Okeagu C, Fleischer MM, Salisbury MR, Newton M, Maerz T, **Fortin P** and Friedrich C (2017). "Local Delivery of SDF-1 β via titania nanotube surfaces to promote osseointegration." Journal of Orthopaedic Research 35(Sup 1): No. 2279.

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Department of Orthopedic Surgery

INTRODUCTION: During primary or revision orthopaedic surgical procedures, the periprosthetic environment is exposed and primed for local delivery of pharmacologic agents and small molecules, which may modulate various biologic responses, including inflammation, foreign body response, and osteogenesis. The objective of this study is to evaluate SDF-1 β delivery potential via functionalization of heparin bound titania nanotubes (TiNT) surfaces, which have been previously shown to increase osseointegration. SDF-1 β is highly chemotactic for mesenchymal stem cells. We hypothesize that SDF-1 β delivery will result in enhanced recruitment of stem cells and subsequent new bone formation by recruited cells. **METHODS:** TiNT surfaces were etched from Ti-6Al-4V alloy via electrochemical anodization. Samples were sonicated to produce Aligned TiNT (aligned hollow tubular structures), or unsonicated for Trabecular TiNT (disorganized structure mimicking bone). Annealed and unannealed surfaces were evaluated with unetched titanium alloy as the Control. To promote the attachment of SDF-1 β to the implant, materials were functionalized with a heparin-dopamine (Hep-DOPA). Confirmation of Hep-DOPA conjugation was confirmed via toluidine blue staining and X-Ray photoelectron spectroscopy (XPS). Attachment of SDF-1 β was confirmed by quantifying the unbound SDF-1 β left in the soak solution. A pilot release experiment was conducted with three SDF-1 β dosages (50, 100, 500 ng). Samples were immersed in a phosphate buffered saline + bovine serum albumin solution, and the supernatant was analyzed at four timepoints (0, 24, 48, 72, 144 hrs). After IACUC approval, Sprague-Dawley rats received bilateral femoral intramedullary implants-Ti alloy Kirschner-wires (1.25 mm diameter) with either Aligned or Trabecular TiNT surfaces (n=8/group)-and were allowed ad libitum activity until the 12-week study endpoint. One limb received a TiNT-etched (either Aligned or Trabecular) implant loaded with 100ng SDF-1 β , while the other limb received a TiNT-etched implant (same morphology) without SDF-1 β . Periprosthetic bone formation was characterized via longitudinal μ CT imaging (Viva80-CT, Scanco USA) at 4- and 12-week postoperative timepoints (n=8/group). Characterization was performed in a metaphyseal and diaphyseal volumes-of-interest (VOIs) to determine bone-implant contact (BIC) as well as

standard bone morphometry and densitometry. Endpoint backscattered electron imaging (BEI) and undecalcified histology (n=3/group) will also be performed. Strength of the bone-implant interface will be characterized via biomechanical pull-out testing (n=5/group), performed on an electromechanically-actuated uni-axial materials loading frame (Insight 150, MTS Systems). Animals were randomized to both TiNT group as well as characterization group (BEI/histology vs. biomechanics). RESULTS: Unannealed coupons contained a greater amount of bound heparin than annealed or control coupons, based on toluidine blue staining. XPS demonstrated decreased nitrogen and sulfur contents on surfaces with bound heparin, further confirmation of effective Hep-DOPA functionalization (Figure 1A). Based on these results, the release and in vivo experiments were conducted with unannealed TiNT. The pilot release experiment demonstrated greater than 99% attachment of SDF-1 β on all surfaces (TiNT and Control) and all dosages at time zero. All samples showed similar release profiles through the 144-hour timepoint, with total released quantity of SDF-1 β ranging from 0.0365 to 0.0487 pg for all groups and dosages. In vivo μ CT (Figure 1B, C) demonstrated no significant differences in BIC between groups, though bone tissue mineral density (TMD) was significantly greater in Aligned TiNT + SDF-1 β implanted femora vs. Aligned TiNT alone (p=0.02). Overall mean BICs of the metaphysis and diaphysis, respectively, were 0.49 ± 0.14 and 0.32 ± 0.12 . Morphometric analysis in the metaphysis demonstrated significantly greater trabecular number (Tb.N, p=0.02) and significantly lower trabecular spacing (Tb.Sp, p=0.01) in Aligned TiNT + SDF-1 β implanted femora vs. Aligned TiNT alone. In the diaphyseal VOI, there were trending increases in bone-implant contact, bone volume/total volume (BV/TV), and bone mineral density (BMD) in both TiNT + SDF-1 β implanted femora vs. TiNT alone at 4- and 12-week timepoints, although not significant. When normalizing TiNT + SDF-1 β implanted femora to TiNT alone for each animal, Tb.N was both significantly greater in Trabecular TiNT-implanted femora vs. Aligned TiNT at 4 weeks (p=0.05), demonstrating a more profound positive effect of SDF-1 β in the Trabecular TiNT group compared to the Aligned TiNT group, and significantly greater in Aligned TiNT + SDF-1 β vs. Aligned TiNT alone at 4 weeks vs. 12 weeks (p=0.01), indicating a more profound positive effect of SDF-1 β at an earlier timepoint. DISCUSSION: We have developed a method for functionalizing TiNT with Hep-DOPA in order to attach SDF-1 β and demonstrated proof-of-concept via XPS, toluidine blue staining, and drug release kinetics. In vivo μ CT imaging demonstrated that SDF-1 β exhibits some osteogenic effects. In the metaphysis, higher TMD, greater Tb.N and lower Tb.Sp. were observed in the SDF-1 β + TiNT group as 12 weeks, suggesting better peri-implant bone growth in this group. Diaphyseal analysis reveals minimal effect of SDF-1 β administration, but considerable bone growth within the medullary canal was observed in all groups. Biomechanical, BEI, histologic analyses as well as ELISA testing on an extended release study (12 timepoints; range, 24 hrs - 91 d) are currently underway to confirm and further elucidate these results.

Yadav S, Reeves A, Campian S, Paine A and **Zakalik D** (2017). "Outcomes of retesting BRCA negative patients using multigene panels." Familial Cancer 16(3): 319-328.

[Full-Text](#)

Department of Internal Medicine

Yadav S, Yadav D and **Zakalik D** (2017). "Squamous cell carcinoma of the breast in the United States: incidence, demographics, tumor characteristics, and survival." Breast Cancer Research and Treatment 164(1): 201-208.

[Full-Text](#)

Department of Internal Medicine

Purpose: Squamous cell carcinoma of breast accounts for less than 0.1% of all breast cancers. The purpose of this study is to describe the epidemiology and survival of this rare malignancy. Methods: Data were extracted from the National Cancer Institute's Surveillance, Epidemiology and End Results Registry to identify women diagnosed with squamous cell carcinoma of breast between 1998 and 2013. SEER*Stat 8.3.1 was used to calculate age-adjusted incidence, age-wise distribution, and annual percentage change in incidence. Kaplan-Meier curves were plotted for survival analysis. Univariate and multivariate Cox proportional hazard regression model was used to determine predictors of survival. Results: A total of 445 cases of squamous cell carcinoma of breast were diagnosed during the study period. The median age of diagnosis was 67 years. The overall age-adjusted incidence between 1998 and 2013 was 0.62 per 1,000,000 per year, and the incidence has been on a decline. Approximately half of the tumors were poorly differentiated. Stage II was the most

common stage at presentation. Majority of the cases were negative for expression of estrogen and progesterone receptor. One-third of the cases underwent breast conservation surgery while more than half of the cases underwent mastectomy (unilateral or bilateral). Approximately one-third of cases received radiation treatment. The 1-year and 5-year cause-specific survival was 81.6 and 63.5%, respectively. Excluding patient with metastasis or unknown stage at presentation, in multivariate Cox proportional hazard model, older age at diagnosis and higher tumor stage (T3 or T4) or nodal stage at presentation were significant predictors of poor survival. Conclusions: Our study describes the unique characteristics of squamous cell carcinoma of breast and demonstrates that it is an aggressive tumor with a poor survival. Older age and higher tumor or nodal stages at presentation were independent predictors of poor survival for loco-regional stages.

Yang H and **Yu L** (2017). "Cutaneous and superficial soft tissue CD34+ spindle cell proliferation." Archives of Pathology and Laboratory Medicine 141(8): 1092-1100.

[Full-Text](#)

Department of Pathology

Context.-Cutaneous and superficial soft tissue spindle cell proliferations with CD34+ expression represent a unique heterogeneous group of lesions. They can pose diagnostic challenges for unaware pathologists in their daily practice. Objective.-To review selected entities of CD34+ spindle cell proliferations in the skin and superficial soft tissue. The effective diagnostic approaches using clinical, histopathologic, and immunophenotypical findings are discussed within a broad spectrum of differential diagnosis. Data Sources.- All information used in the article is obtained from published literature by PubMed search and Internet-based search engines. The authors' collective experience and real-life examples are also used. Conclusions.- Spindle cell proliferations with CD34+ positivity can be worked up to a definitive diagnosis by using clinical, histopathologic, and immunophenotypical findings. Familiarity with these entities helps pathologists make the accurate diagnosis.

Yilmaz A, Geddes T, Han B, **Bahado-Singh RO, Wilson GD, Imam K, Maddens M** and **Graham SF** (2017). "Diagnostic biomarkers of alzheimer's disease as identified in saliva using 1H NMR-based metabolomics." Journal of Alzheimer's Disease 58(2): 355-359.

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Department of Obstetrics and Gynecology

Department of Radiation Oncology

Department of Internal Medicine

Using 1H NMR metabolomics, we biochemically profiled saliva samples collected from healthy-controls (n = 12), mild cognitive impairment (MCI) sufferers (n = 8), and Alzheimer's disease (AD) patients (n = 9). We accurately identified significant concentration changes in 22 metabolites in the saliva of MCI and AD patients compared to controls. This pilot study demonstrates the potential for using metabolomics and saliva for the early diagnosis of AD. Given the ease and convenience of collecting saliva, the development of accurate and sensitive salivary biomarkers would be ideal for screening those at greatest risk of developing AD.

Yuan JC, Brisson RJ, Barremkala M, Venuti JM and **Thompson BJ** (2017). "Rare bilateral variation of the extensor carpi radialis longus muscle." FASEB Journal 31(1): 896.823.

[Full-Text](#)

OUWB Medical Student Author

Department of Biomedical Sciences (OU)

Objective The extensor carpi radialis longus (ECRL) is a superficial extensor muscle with a single muscle belly and tendon. In humans, the ECRL is found on the lateral forearm and serves to extend and abduct the hand at the wrist. While anatomical variations of the musculature of the extensor forearm are uncommon, it is essential for physicians working in this area of the body to be aware of possible variations. Methods Dissections of 68 upper limbs from 34 cadavers were performed and the musculature and neurovasculature of the lateral forearm was assessed. Results One cadaver displayed an accessory muscle belly bilaterally with a long slender tendon arising from the ECRL muscle and inserting distally near the wrist. Both the accessory

muscle on the right upper limb and left upper limb inserted on the abductor pollicis brevis muscle. Conclusion This is a rare instance of a bilateral presentation of an accessory ECRL muscle, also known as the extensor carpi radialis accessorius (ECRA). Due to its infrequency, awareness of this accessory muscle and tendon may help physicians avoid improper muscle recognition when visualizing the area. As it is likely that the ECRA only weakly assists with the extension function of the ECRL, when present it may be used as an attractive autograft option for reconstructive surgery with minimal adverse effects.

Zanyk-Mclean K, Sawyer KN, Paternoster R, Shievitz R, Devlin W and Swor R (2017). "Time to awakening is often delayed in patients who receive targeted temperature management after cardiac arrest." [Therapeutic Hypothermia and Temperature Management](#) 7(2): 95-100.

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OUWB Medical Student Author

Department of Emergency Medicine

Department of Internal Medicine

Post cardiac arrest, neuroprognostication remains a complex and clinically challenging issue for critical care providers. For this reason, our primary objective in this study was to determine the frequency of survival and favorable neurological outcomes in post-cardiac arrest patients with delayed time to awakening. To assess whether early withdrawal of care may adversely impact survival, we also sought to describe the time to withdrawal of care of non-surviving patients. We performed a retrospective study of patients resuscitated after cardiac arrest in two large academic community hospitals. We performed a structured chart review of patients treated with therapeutic hypothermia (TH) at one hospital from 2009 to 2015 and at a second hospital from 2013 to 2015. Demographics and Utstein style variables were recorded on all patients, as well as temporal variables to characterize the time interval from Return of Spontaneous Circulation (ROSC) to awakening as recorded by ICU nurses and defined as Glasgow Coma Scale (GCS) of >8. Descriptive data were also captured regarding time to withdrawal of care. We pre-hoc defined delayed awakening as >72 hours post ROSC or >72 hours post rewarming. Our primary outcome was survival to hospital discharge with a secondary outcome of a favorable cerebral performance category of 1 or 2. During this study period, 321 patients received TH, with 111 (34.6%) discharged alive and, of these, 67 (68.5%) experienced a good neurological outcome. Awakening more than 72 hours after return of circulation was common with 31 patients surviving to discharge. Of these, 16 of 31 (51.6%) were found to have a good neurological outcome on hospital discharge. Of the patients who died before discharge, 54 (29.5%) had care withdrawn less than 72 hours after ROSC. A delayed time to awakening is not infrequently associated with a good neurological outcome after TH in patients resuscitated from cardiac arrest. © Copyright 2017, Mary Ann Liebert, Inc. 2017.

Zhou Y, Blankenshi L and **Jaiyesimi I** (2017). "Crizanlizumab in Sickle Cell Disease (Letter)." [New England Journal of Medicine](#) 376(18): 1795-1796.

[Full-Text](#)

Department of Internal Medicine