

OAKLAND UNIVERSITY WILLIAM BEAUMONT SCHOOL OF MEDICINE

PUBLICATION LIST

October - December 2016

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Abbas A, Zacharias S, **Goldstein J**, Madder R, Hanson I and **Safian R** (2016). "Invasive characterization of atherosclerotic plaque in patients with peripheral arterial disease using near infrared spectroscopy intravascular ultrasound." *Journal of the American College of Cardiology* 68(18): B327.

[Full-Text](#)

Department of Internal Medicine

BACKGROUND Several imaging and autopsy studies have described plaque morphology (PM) in different vascular beds, including lipid (LCP), fibrosis, and calcification. We sought to describe the PM in patients with peripheral arterial disease (PAD) using near infrared spectroscopy-intravascular ultrasound (NIRS-IVUS) and compare PM in different vascular beds. **METHODS** We performed invasive angiography and NIRS-IVUS in PAD patients prior to percutaneous revascularization. Imaging evaluation included parameters from angiography, IVUS, and NIRS. NIRS-IVUS findings were compared among different vascular beds with regard to the presence and extent of calcification and LCP. **RESULTS** Angiography and NIRS-IVUS were performed in 149 lesions in 126 PAD patients, including the internal carotid (n=10), subclavian/ axillary (n=9), renal (n=14), iliac (n=35), femoro-popliteal (n=69), and infra- popliteal (n=12) arteries. The PM was calcified plaque in 89% of lesions and fibrous plaque in 11% of lesions. The prevalence of calcification varied from 100% of renal artery stenoses to 50% of subclavian/axillary artery stenoses. LCP was present in 32% of lesions and varied from 55.6% in carotid artery stenoses to 0% in renal artery stenoses. LCP was only observed in fibrocalcific plaque, and was circumferentially surrounded by a similar or more extensive degree of calcium. Four lesion types were found depending on the presence and absence of calcification and/or LCP (Figure 1) **CONCLUSION** NIRS-IVUS in PAD patients demonstrates differences in the frequency of calcific plaque and LCP in different arterial beds. (Figure Presented).

Abbas AE (2016). "Pulmonary vascular resistance in patients with pulmonary hypertension: Importance of the quadratic velocity-pressure relationship." *Circulation Journal* 80(12): 2562.

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Department of Internal Medicine

Ahmed AT, Mohammed K, Chehab M, Brinjikji W, Hassan Murad M, Cloft H and Bjarnason H (2016). "Comparing percutaneous transluminal angioplasty and stent placement for treatment of subclavian arterial occlusive disease: A systematic review and meta-analysis." Cardiovascular and Interventional Radiology 39(5): 652-667.

[Full-Text](#)

Department of Internal Medicine

Alapati AN and **Trese MT** (2016). "A retrospective analysis of the timing of initial treatment of bedside screened vs. photographically screened Retinopathy of Prematurity (ROP) eyes." Investigative Ophthalmology and Visual Science 57(12): 2.

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OUIWB Medical Student Author

Department of Ophthalmology

Al-Hadidi A, Mohammed A and **Morden R** (2016). "Thyroglossal duct papillary carcinoma with squamous metaplasia in a 12-year old female and review of literature." Journal of Pediatric Surgery Case Reports 15(2016): 31-32.

[Full-Text](#)

OUIWB Medical Student Author

Department of Surgery

We are reporting a case of a 12-year old African-American female who presented with a six-month history of a painless, enlarging, midline neck mass. Imaging demonstrated a 4-cm solid mass with cystic components and calcifications. Differential diagnosis included dermoid tumor, teratoma, sarcomatous lesion, thyroglossal duct cyst carcinoma, and ectopic thyroid tissue with malignant transformation. Preoperative thyroid studies were unremarkable. Patient underwent Sistrunk procedure and cervical lymph node dissection. Pathology reported a diagnosis of papillary carcinoma with squamous metaplasia arising from a thyroglossal duct cyst with three of five positive lymph nodes. Post-operative thyroid studies and imaging were unremarkable. After literature review on pediatric cases of thyroglossal duct carcinomas, the decision was made to forgo thyroidectomy and opt for close follow-up. Thyroglossal duct carcinoma is a rare pediatric tumor with approximately 26 cases reported in the literature. Best practice for the extent of surgical resection and post-operative management is still evolving as we gather data on long-term outcomes.

Aljundi L, Miller N, Taylor A, **Hung J** and Hwang C (2016). "Time to castration-resistance and docetaxel outcomes in metastatic prostate cancer." Journal of Clinical Oncology 34(Sup 15).

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OUIWB Medical Student Author

Background: Castration resistant prostate cancer (CRPC) continues to present a challenge for oncologists. There is renewed interest in the use of docetaxel in advanced prostate cancer; however, a significant portion of patients do not respond and eventually all patients develop resistance. Androgen receptor (AR) variants have been hypothesized to be a common resistance mechanism to both androgen deprivation therapy (ADT) and docetaxel. We thus proposed that initial response to ADT might predict future response to docetaxel. Methods: A set of Cox regressions was computed to investigate the time to progression while on ADT and other factors on time to progression and overall survival while on docetaxel. Hazard ratios and p-values for each factor were calculated. Patients were stratified according to their time to progression while on ADT into three groups by tertiles. Rapid progressors were patients who progressed within less than a year while on ADT, intermediate progressors progressed within 1 and 2.6 years and slow progressors progressed after more than 2.6 years. Survival for each of these three categories was plotted using the Kaplan-Meier method and differences were assessed with the log-rank test. Results: Time to prostate specific antigen (PSA) progression while on ADT predicted future docetaxel response (HR = 0.8, p = 0.03) in univariate analysis. A difference in time to PSA progression was noted between rapid and fast progressors on ADT (p = 0.009, log-rank test). Overall survival for rapidly progressing patients was significantly inferior to intermediate and slow progressors (p = < 0.001, logrank). However, multivariate analysis did not meet criteria for statistical significance between time to progression while on ADT and time to progression while on docetaxel (p = 0.062). Conclusions: Although time to CRPC was correlated with docetaxel outcomes, the relationship was

not statistically significant on multivariate analysis. Further research is required to identify molecular characteristics in patients with CRPC that will predict response and outcomes with more precision.

Amos J, Baron A and **Rubin AD** (2016). "Autoimmune swallowing disorders." Current Opinion in Otolaryngology and Head and Neck Surgery 24(6): 483-488.

[Full-Text](#)

Department of Surgery

Anderson BM, Kamrava M, **Wang PC, Chen P**, Demanes DJ, Hayes JK and Kuske RR (2016). "Locoregional recurrence by molecular subtype after multicatheter interstitial accelerated partial breast irradiation: Results from the Pooled Registry Of Multicatheter Interstitial Sites research group." Brachytherapy 15(6): 788-795.

[Full-Text](#)

Department of Family Medicine

Department of Radiation Oncology

Aneese AM, Mogrovejo E, Gjeorgjievski M, **Ghaith G** and **Cappell M** (2016). "Severe, chronic duodenitis as an unusual cause of gastric outlet obstruction." American Journal of Gastroenterology 111(Sup 1): S1032.

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OUWB Medical Student Author

Department of Internal Medicine

Arslanturk S, Siadat MR, Ogunyemi T, Killinger K and **Diokno A** (2016). "Analysis of incomplete and inconsistent clinical survey data." Knowledge and Information Systems 46(3): 731-750.

[Full-Text](#)

Department of Urology

Awad SS, Ward A, Barnes J and **Merson R** (2016). "Android-based real-time signal processing to treat speech-language pathologies." 2015 11th International Computer Engineering Conference: Today Information Society What's Next?, ICENCO 2015, Cairo UniversityCairo; Egypt. 68-75.

[Full-Text](#)

Department of Physical Medicine and Rehabilitation

Bartley JM, Killinger KA, **Boura JA**, Gupta P, Gaines N, **Gilleran JP** and **Peters KM** (2016). "The impact of prior back surgery on neuromodulation outcomes: A review of over 500 patients." Neurourology and Urodynamics. ePub Ahead of Print.

[Full-Text](#)

Department of Urology

Department of Biomedical Sciences (BHS)

Basir M, Khandelwal A, **Dixon S**, Moses J, Maini B, Grines C, Schreiber T, Ohman EM and O'Neill W (2016). "Mechanical circulatory support in acute myocardial infarction complicated by cardiogenic shock: Insights from the cVAD registry." Journal of the American College of Cardiology 68(18): B49.

[Full-Text](#)

Department of Internal Medicine

BACKGROUND The role and timing of percutaneous mechanical circulatory support devices in the treatment of acute myocardial infarction complicated by cardiogenic shock (AMICS) is not well understood. We therefore sought to evaluate patient characteristics and predictors of outcomes in patients presenting with AMICS supported with an Impella device. **METHODS** 287 consecutive unselected patients enrolled in the cVAD Registry presenting with AMICS who underwent percutaneous coronary intervention (PCI) were included in this analysis. All patients were supported with either the Impella 2.5 or Impella CP. **RESULTS** Mean patient age was 65.3±12.5 years, 76% were male, mean left ventricular ejection fraction was 25.3±12.7%. Prior to receiving Impella support, 80% of the patients required ≥2 inotropes, 40% were

supported with intra-aortic balloon pump, 52% experienced cardiac arrest, 19% presented with anoxic brain injury and 9% were under active cardiopulmonary resuscitation at the time of Impella implantation. Survival to discharge was 44%. Improved survival was associated with Impella implantation early after shock onset, before initiation of inotropes and prior to PCI. Survival was 66 when Impella was implanted <1.25 hours from shock onset, 37% when implanted within 1.25-4.25 hours, and 26% when implanted after 4.25 hours ($p=0.04$). Survival was 68%, 46%, 35%, 35%, 26% for patients requiring 0, 1, 2, 3, ≥ 4 inotropes prior to Impella support respectively ($P=0.001$). Survival was 46% when Impella was implanted prior to PCI versus 35% when implanted post PCI ($P<0.01$). CONCLUSION Impella implantation early after shock onset, before initiation of inotropes and prior to PCI is associated with improved survival in patients presenting with AMICS.

Bauer ST, Price L, MacEachern MP, Housey MT, Langen E and Bauer ME (2016). "Maternal leukocytosis after antenatal corticosteroid administration: A systematic review and meta-analysis [15]." *Journal of Immunology* 127 Suppl 1: 6s.

[Full-Text](#)

Department of Obstetrics and Gynecology

INTRODUCTION: To establish the expected range of maternal leukocytosis in healthy pregnant women without infection after antenatal corticosteroid administration. METHODS: PubMed, Embase, and ClinicalTrials.gov were searched to identify studies that reported white blood cell (WBC) counts in healthy women with singleton gestations without signs of clinical infection preceding and after antenatal corticosteroid administration at 24, 48, 72, and/or 96 hours. The mean, standard deviation, and two standard deviations from the mean were reported. The inverse variance weighting technique was used to calculate weighted means, as well as one and two standard deviations from the mean to determine the expected range of WBC count for each time period. RESULTS: Eight studies met inclusion criteria (695 patients and 1,748 data points). Mean maternal WBC count values prior to antenatal corticosteroid administration and 24, 48, 72, and 96 hours after corticosteroid administration were 10.4, 13.7, 12.8, 11.5, and 11.1x10⁶/L, respectively. A subset of patients with preterm premature rupture of membranes (PPROM) had mean WBC count values prior to corticosteroid administration and 24 and 48 hours after corticosteroid administration of 10.0, 13.8, and 13.0x10⁶/L. The highest second standard deviation from the mean was 18.3x10⁶/L, which occurred at 24 hours after antenatal corticosteroid administration. CONCLUSION/IMPLICATIONS: Leukocytosis mean peaks at 24 hours after corticosteroid administration. The highest second standard deviation from the mean was 18.3x10⁶/L. More studies are required to determine if further infectious workup is warranted in women receiving antenatal corticosteroids when WBC values are outside of this range.

Beeravolu N, **Brougham J**, Khan I, McKee C, **Perez-Cruet M** and Chaudhry GR (2016). "Human umbilical cord derivatives regenerate intervertebral disc." *Journal of Tissue Engineering and Regenerative Medicine*. ePub Ahead of Print.

[Full-Text](#)

OUWB Medical Student Author

Department of Neurosurgery

Intervertebral disc (IVD) degeneration is characterized by the loss of nucleus pulposus (NP), which is a common cause for lower back pain. Although, currently, there is no cure for the degenerative disc disease, stem cell therapy is increasingly being considered for its treatment. In this study, we investigated the feasibility and efficacy of human umbilical cord mesenchymal stem cells (MSCs) and chondroprogenitor cells (CPCs) derived from those cells to regenerate damaged IVD in a rabbit model. Transplanted cells survived, engrafted and dispersed into NP in situ. Significant improvement in the histology, cellularity, extracellular matrix proteins, and water and glycosaminoglycan contents in IVD recipients of CPCs was observed compared to MSCs. In addition, IVDs receiving CPCs exhibited higher expression of NP-specific human markers, SOX9, aggrecan, collagen 2, FOXF1 and KRT19. The novelty of the study is that in vitro differentiated CPCs derived from umbilical cord MSCs, demonstrated far greater capacity to regenerate damaged IVDs, which provides basis and impetus for stem cell based clinical studies to treat degenerative disc disease. Copyright (c) 2016 John Wiley & Sons, Ltd.

Bezjak A, Paulus R, Gaspar LE, Timmerman RD, Straube WL, Ryan WF, Garces Y, Pu AT, Singh AK, Videtic GM, McGarry RC, Iyengar P, Pantarotto JR, Urbanic JJ, Sun A, Daly ME, **Grills IS**, Normolle DP, Bradley JD and Choy H (2016). "Primary study endpoint analysis for NRG Oncology/RTOG 0813 trial of Stereotactic Body Radiation Therapy (SBRT) for centrally Located Non-Small Cell Lung Cancer (NSCLC)." International Journal of Radiation Oncology Biology Physics 94(1): 5-6.

[Full-Text](#)

Department of Radiation Oncology

Purpose/Objective(s): NRG/Radiation Therapy Oncology Group (RTOG) 0813 is a phase 1/2 study designed to determine the maximal tolerated dose (MTD) and efficacy of SBRT for NSCLC with centrally located tumors. We hereby report the primary endpoint of the phase 1 portion of the study. Materials/Methods: Medically inoperable patients (pts) with biopsy-proven, positron emission tomography-staged T1-2 (<5 cm) N0M0 NSCLC and centrally located tumors (within or touching the zone of the proximal bronchial tree or adjacent to mediastinal or pericardial pleura) were successively accrued onto a dose-escalating 5-fraction SBRT schedule ranging from 10 to 12 Gy/fraction delivered over 1.5 to 2 weeks. Dose-limiting toxicity (DLT) was defined as any grade 3 or worse toxicity (per Common Terminology Criteria for Adverse Events version 4) occurring within the first year, possibly, probably, or definitely related to treatment from a prespecified list of disorders. Any potential DLT within the initial year post-SBRT could have led to dose reduction for subsequent patients accrued, using time-to-event continual reassessment method statistical design. MTD was defined as SBRT dose associated with a 20% probability of DLT. Results: One hundred twenty pts were accrued February 2009 to September 2013 from 43 participating centers. Numbers (n) accrued into each cohort, n eligible for analysis (20 pts excluded as did not receive protocol treatment [12] or were ineligible [8]), and n evaluable for DLT analyses (11 not evaluable, 10 of whom died in the first year without a DLT) are shown in the table. Pts were elderly (median age 72 years), there were slightly more females (57%), and the majority had performance (Table Presented) status 0 to 1 (84%). Most cancers were T1 (65%) and squamous cell (45%). Median follow-up was 26.6 months. There were 5 DLTs seen; the table details the protocol prespecified DLTs and the worst treatment-related adverse events. MTD is 12.0 Gy/fr; DLT on this arm was 7.2% (95% CI 2.8%-14.4%). Conclusion: The novel statistical design used in RTOG 0813 allowed for seamless uninterrupted accrual of pts onto successive dose-escalated cohorts, with a large number of pts contributing to DLT data. The rates of toxicity prespecified as DLT were relatively low. The highest dose level allowed by the protocol was associated with a 7.2% rate of DLT; however, there still is considerable toxicity associated with this level. A decision regarding the optimal dose to be used for centrally located cancers needs to await the efficacy analysis of the phase 2 portion of this study.

Biliti D, **Amin M** and Britton S (2016). "Effective EDTA-based decalcification technique of bony tissues for molecular diagnostic techniques." Journal of Molecular Diagnostics 18(6): 1050.

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Department of Pathology

Introduction: Decalcification solutions contain strong acids which are harsh on tissues and damage the DNA. Milestone has created a proprietary 10% EDTA solution called Mol-Decalcifier to decalcify bone specimens in 16 hours and still allow for molecular testing. This study is designed to explore the effects of Mol-Decalcifier on bone core biopsies, H&E staining quality and molecular testing (PCR and FISH). Methods: Different batches of formalin-fixed bone core biopsies were tested with this decalcification procedure. Biopsies were obtained and placed into 10mL of preheated Mol-Decalcifier. A Shaking Bath was used to maintain 37°C with concomitant agitation. Biopsies were removed from the decal solution after the assigned time intervals (range 2 to 30 hours) and rinsed in water for 30 minutes. All biopsies were routinely processed thereafter to create paraffin blocks. All biopsies were evaluated for ease of microtomy sectioning and quality of H&E stained sections. We tested for DNA viability with FISH and PCR testing. Results: Twentytwo hours was determined as the maximum amount of decalcification time using Mol-Decalcifier and still have viable DNA for PCR, but not for FISH. Less DNA was retrieved if decalcified longer than 22 hours. We successfully attempted both PCR and FISH testings for decalcification times of 12-16 hours. Decalcification for less than 12 hours affected the microtomy sectioning as tissue was incompletely decalcified. Conclusion: A decalcification technique that preserves DNA integrity is a critical need at this time. By implementing the use

of Mol-Decalcifier for all bone core biopsies, the pathologist will have to contend with increased turnaround times for biopsy diagnoses. A decalcification technique that preserves the DNA integrity is an essential need in the current era of molecular testing. Radiologist prefer to biopsy bone as compared to visceral organs (such as lung and liver) as this is likely to have the least clinical complications.

Blanke P, Naoum C, Ahmadi A, Cheruvu C, Soon J, Arepalli C, Gransar H, Achenbach S, Berman DS, Budoff MJ, Callister TQ, Al-Mallah MH, Cademartiri F, **Chinnaiyan K**, Rubinshtein R, Marquez H, DeLago A, Villines TC, Hadamitzky M, Hausleiter J, Shaw LJ, Kaufmann PA, Cury RC, Feuchtner G, Kim YJ, Maffei E, **Raff G**, Pontone G, Andreini D, Chang HJ, Chow BW, Min J and Leipsic J (2016). "Long-term prognostic utility of coronary CT angiography in stable patients with diabetes mellitus." JACC: Cardiovascular Imaging 9(11): 1280-1288.

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Department of Internal Medicine

Blatt A, Saggi G, **Cortes C**, Herbert A, Kavanagh D, Ricklin D, Lambris J, Valenzuela J and Ferreira V (2016). "Role of factor H and effects of C-terminal mutations on control of human platelet/granulocyte aggregate formation." European Journal of Immunology 46(Sup 1): 366-367.

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Department of Biomedical Sciences (OU)

Brandenburg S and **Basmaji C** (2016). "Imaging of biliary tract emergencies: A multi-modality case review." Emergency Radiology 23(6): 548.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Learning Objectives/Aims: Abdominal pain from acute cholecystitis is relatively common in the emergency setting. However, radiologists and clinicians must be comfortable identifying other causes of acute and emergent biliary diseases. Failure to do so can lead to significant morbidity and mortality. This educational poster provides multi-modality examples of several biliary tract emergencies beyond routine cholecystitis. The goal is to help radiologists become comfortable in identifying various acute and emergent biliary pathologies on multiple imaging modalities. We will also briefly review the management of these conditions in order to guide radiologists in providing a clinically relevant report. Background: Detection of emergent biliary tract pathology requires meticulous imaging evaluation of the gallbladder, bile ducts and adjacent organs which can also contribute to biliary tract pathology. Cross sectional imaging including CT, MRI, and ultrasound are often required to make the diagnosis and to assess the extent of the disease process. For example, CT may detect subtle gas-forming infections or confirm a gallstone. MR can aid in diagnosing and assessing the extent of cholangitis or gangrenous cholecystitis. Nuclear medicine can play a crucial role in the setting of cystic duct obstruction or bile leak. Understanding which imaging test to order is also paramount to making the correct diagnosis in a timely manner. Content: 1. Introduction to biliary tract - Anatomy 2. Pathologic Conditions - Empyema, gangrenous cholecystitis, gallstone ileus, cholangitis, Mirizzi syndrome, gallbladder torsion, perforation/bile leak, hemobilia 3. Diagnostic Approach - US, CT, MR, Nuc Med 4. Management - Conservative vs. Surgical Summary: Emergencies of the biliary tract beyond routine acute cholecystitis can be catastrophic if diagnosis is delayed. Therefore, sufficient knowledge of the less common entities and understanding of the most appropriate imaging studies to recommend is crucial for both efficient and effective diagnosis. It is imperative for optimal patient outcome that the radiologist is also familiar with various management options of these conditions.

Brown JR, **Rezaee ME**, Marshall EJ and Matheny ME (2016). "Hospital mortality in the United States following acute kidney injury." BioMed Research International 2016(Article ID 4278579): 6.

[Full-Text](#)

OUWB Medical Student Author

Burgos KD, Sienko SE, Hoffman JL, Koerber JM and **Smythe MA** (2016). "Characteristics, management, and outcomes of patients with atrial fibrillation experiencing a major bleeding event while on rivaroxaban." Clinical and Applied Thrombosis/Hemostasis: 1-7. ePub Ahead of Print.

[Full-Text](#)

Department of Biomedical Sciences (BHS)

Rivaroxaban, the first oral direct factor Xa inhibitor, was approved for stroke prevention in nonvalvular atrial fibrillation in 2011. Limited data are available regarding major bleeding in a clinical practice setting. The purpose of this study is to describe the patient characteristics, management, and outcomes of major bleeding events in patients receiving rivaroxaban for atrial fibrillation. This retrospective, single health system study identified patients with rivaroxaban having a major bleeding event between July 2011 and June 2014. Patients were identified through adverse event reporting or by cross-referencing rivaroxaban with International Classification of Diseases, Ninth Revision diagnosis codes for atrial fibrillation and hemorrhage, with and without transfusion. A total of 60 patients were identified. The mean age of patients was 80.3 +/- 7.4 years. The most common bleed sites were gastrointestinal (63.3%) and intracranial (26.7%). Higher dose than recommended based on renal function was present in 35% of patients and concurrent antiplatelet therapy occurred in 70%. Activated prothrombin complex concentrate was utilized in 30% of patients and recombinant factor VIIa in 6.7%. A procedure or surgery was performed for bleed management in 10 patients. Anticoagulation was held at discharge in 76% of patients. A total of 6 patients died during hospital admission, 5 of whom experienced an intracranial hemorrhage. In conclusion, patients experiencing a rivaroxaban major bleeding event were elderly, often renally impaired, and receiving concurrent antiplatelet therapy. In-hospital mortality was 10%. The majority of patients (76%) had anticoagulation therapy held at discharge.

Burks FN (2016). "Editorial commentary." Urology Practice 3(6): 460-461.

[Full-Text](#)

Department of Urology

Cappell M, Mogrovejo E and Desai T (2016). "Case report of patient presenting in shock from band penetration into stomach after LAGB surgery: Diagnosis by emergency EGD After misdiagnosis by abdominal CT." Digestive Diseases and Sciences 61(11): 3366-3368.

[Full-Text](#)

Department of Internal Medicine

Cappell MS (2016). "Equal authorship for equal authors: Personal experience as an equal author in twenty peer-reviewed medical publications during the last three years." Journal of the Medical Library Association 104(4): 363-364.

[Full-Text](#)

Department of Internal Medicine

Cappell MS (2016). "A public tribute to the editors and publishers of digestive diseases and sciences: Personal experience with authorship of 43 publications in this journal during the last 29 years." Digestive Diseases and Sciences 61(12): 3635.

[Full-Text](#)

Department of Internal Medicine

Chirco KR, Hazlewood RJ, Miller K, Workalemahu G, Jampol LM, **Lesser GR**, Mullins RF, Kuehn MH and Fingert JH (2016). "MMP19 expression in the human optic nerve." Molecular Vision 22: 1429-1436.

[Full-Text](#)

Department of Ophthalmology

De Souza e Silva CG, **Franklin BA** and Soares de Araújo CG (2016). "Influence of central obesity in estimating maximal oxygen uptake." Clinics 71(11): 629-634.

[Full-Text](#)

Department of Internal Medicine

DeBaets A (2016). "Responsibility, constraint, and the complexities of moral agency." AJOB Neuroscience 7(4): 212-213.

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Department of Biomedical Sciences (OU)

Ding X, **Li X**, Zhang JM, Kabolizadeh P, **Stevens C** and **Yan D** (2016). "Spot-Scanning Proton Arc (SPArc) therapy: The first robust and delivery-efficient spot-scanning proton arc therapy." International Journal of Radiation Oncology Biology Physics 96(5): 1107-1116.

[Full-Text](#)

OUWB Medical Student Author

Department of Radiation Oncology

Diokno AC (2016). "Foreword," In Lajiness M and Quallich S (ed). The Nurse Practitioner in Urology. Switzerland: Springer. pp: v-vi.

[Full-Text](#)

Department of Urology

Douglas PS, Cerqueira MD, Berman DS, **Chinnaiyan K**, Cohen MS, Lundbye JB, **Patel RAG**, Sengupta PP, Soman P, Weissman NJ, Wong TC, Asch F, Bateman TM, Berman DS, Biesbrock G, Brinker J, Brophy D, Cerqueira M, **Chinnaiyan K**, Cohen M, Dilsizian V, Douglas PS, Dudley J, Epstein F, Gillam L, Lundbye J, McCallister B, Narula J, **Patel RAG**, Reynolds D, Schoepf UJ, Sengupta PP, **Shah N**, Soman P, Udelson JE, Valeti US, Walsh MN, Ward RP, Weigold WG, Weissman NJ, White RD, Wolinsky D, Wong TC and Zoghbi WA (2016). "The future of cardiac imaging: Report of a think tank convened by the American College of Cardiology." JACC: Cardiovascular Imaging 9(10): 1211-1223.

[Full-Text](#)

Department of Internal Medicine

Department of Diagnostic Radiology and Molecular Imaging

Drenser K, Girach A and **Capone A, Jr.** (2016). "A randomized, placebo-controlled study of intravitreal ocriplasmin in pediatric patients scheduled for vitrectomy." Retina 36(3): 565-575.

[Full-Text](#)

Department of Ophthalmology

PURPOSE: To evaluate safety and preliminary efficacy of 175 mug of intravitreal ocriplasmin in pediatric patients scheduled for vitrectomy. **METHODS:** Based on a single-center, prospective, randomized, placebo-controlled, and double-masked Phase 2 study, 22 pediatric patients scheduled for vitrectomy were randomized 2:1 to 175-mug ocriplasmin injection or placebo. Treatment was administered midvitreal 30 minutes to 60 minutes before vitrectomy. Safety was assessed by reported adverse events (AEs), ophthalmologic examinations, fundus photography, and fluorescein angiography. The primary efficacy endpoint was the proportion of eyes with total macular posterior vitreous detachment before vitrectomy or after application of suction. Secondary endpoints included vitreous liquefaction assessment before vitrectomy and immediate postoperative retinal reattachment. **RESULTS:** All patients experienced at least 1 AE. Most AEs were ocular and occurred in the study eye. Serious AEs were reported for 2 of 16 eyes (3.4%) in the ocriplasmin group and 2 of 8 eyes (11.1%) in the placebo group. One case of lens subluxation due to zonular disruption was observed in the ocriplasmin group. A clear efficacy signal was not observed. **CONCLUSION:** Intravitreal injection of 175 mug of ocriplasmin was tolerated in pediatric patients before vitrectomy; however, the small sample size in this study precluded adequate efficacy comparisons. AEs reported were consistent with those anticipated in pediatric patients.

Eaton KW and **Ferrari TM** (2016). "Cardiorespiratory parameters correlated with self-forgiveness." Psychophysiology 53(Sup 1): S30.

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OUWB Medical Student Author

Department of Biomedical Sciences (OU)

Eckleberry-Hunt J, Kirkpatrick H, Taku K, **Hunt R** and Vasappa R (2016). "Relation between physicians' work lives and happiness." Southern Medical Journal 109(4): 207-212.

[Full-Text](#)

OUWB Medical Student Author

Objectives Although we know much about work-related physician burnout and the subsequent negative effects, we do not fully understand work-related physician wellness. Likewise, the relation of wellness and burnout to physician happiness is unclear. The purpose of this study was to examine how physician burnout and wellness contribute to happiness. **Methods** We sampled 2000 full-time physician members of the American Academy of Family Physicians. Respondents completed a demographics questionnaire, questions about workload, the Physician Wellness Inventory, the Maslach Burnout Inventory, and the Subjective Happiness Scale. We performed a hierarchical regression analysis with the burnout and wellness subscales as predictor variables and physician happiness as the outcome variable. **Results** Our response rate was 22%. Career purpose, personal accomplishment, and perception of workload manageability had significant positive correlations with physician happiness. Distress had a significant negative correlation with physician happiness. **Conclusions** A sense of career meaning and accomplishment, along with a lack of distress, are important factors in determining physician happiness. The number of hours a physician works is not related to happiness, but the perceived ability to manage workload was significantly related to happiness. Wellness-promotion efforts could focus on assisting physicians with skills to manage the workload by eliminating unnecessary tasks or sharing workload among team members, improving feelings of work accomplishment, improving career satisfaction and meaning, and managing distress related to patient care.

Edwards L and **Hafron J** (2016). "Kidney cancer," In Lajiness M and Quallich S (ed). The Nurse Practitioner in Urology. Switzerland: Springer. pp: 333-344.

[Full-Text](#)

Department of Urology

Feng JN, Zhang P, Hysell C, Qu ZH and **Micale M** (2016). "Definitive cytogenetic confirmation of a desmoplastic small round cell tumor in a initially unclassifiable malignant epithelioid neoplasm of small bowel of a 20-year-old man: Case report." American Journal of Clinical Pathology 146(Sup 1): 211.

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Department of Pathology

Fisher J and Betcher K (2016). "Trends in route of hysterectomy with the implementation of a comprehensive robotics training program." Obstetrics and Gynecology 127(Sup 5): 23S-24S.

[Full-Text](#)

Department of Obstetrics and Gynecology

INTRODUCTION: To evaluate trends in mode of hysterectomy performed at a large teaching hospital and a small community hospital over a 5 year period following the implementation of a comprehensive robotics training program. **METHODS:** A review of hysterectomies done at a large teaching hospital and a smaller, community hospital in the same health system over a 5 year period was performed to determine how many hysterectomies were performed using an open, laparoscopic, or vaginal approach. The study included 5175 women, and was evaluated after the implementation of a comprehensive teaching, training, mentoring and proctoring program at each hospital. Laparoscopic procedures included TLH and LSCH, as well as RATLH and RASCH. Vaginal Hysterectomies included TVH and LAVH cases. **RESULTS:** We found a significant decrease in the percent of cases performed through an open approach over the course of the study, with a concurrent significant increase in the percent of robotic procedures performed. There was also a significant decrease in

the percent of case performed vaginally over this period, but this was only observed at the smaller community hospital site. CONCLUSION: At the larger, teaching hospital, the implementation of a comprehensive robotics training program was associated with a significant conversion of cases performed through an open approach to a robotic assisted laparoscopic approach. This was not associated with a decline in the percent of vaginal cases performed. At the smaller, community hospital, more dramatic increases were observed with respect to robotic hysterectomies: however, a decline in the percent of cases performed vaginally was observed.

Fisher JE and Perlin LE (2016). "Post-operative pain and patient satisfaction with single-port robotic-assisted laparoscopic hysterectomies and salpingo-oophorectomies." Journal of Minimally Invasive Gynecology 23(7): S77-S78.

[Full-Text](#)

Department of Obstetrics and Gynecology

Study Objective: To determine if single-port robotic-assisted laparoscopy results in increased patient satisfaction, decreased pain and improved cosmetic appearance. Secondary outcomes to be evaluated include lower blood loss and shorter length of stay. Design: Prospective, case-cohort study. Setting: Large, suburban, academic/teaching hospital. Patients: Women undergoing robotic-assisted gynecologic procedures. Intervention: Analog pain and satisfaction surveys were evaluated in women undergoing laparoscopic single-port and multi-port robotic-assisted hysterectomies and/or salpingo-oophorectomies. Patients received surveys on post-operative day 0 or 1, and at their two-week and six-week post-operative visits, with questions regarding post-operative pain, satisfaction with the surgery and incision appearance, etc. Results were controlled for potential confounding variables such as pre-operative diagnosis, specimen weight, and patient demographics. Evaluation of preoperative pain, intra-operative estimated blood loss, and length of stay were also evaluated and compared between the two groups. Measurements and Main Results: Patients who underwent single-port laparoscopic surgery had a significantly lower estimated blood loss (65 mL versus 107 mL, $p=0.035$). They also had lower pain scores postoperatively (current pain - 2.1/10 versus 5.1/10, $p=0.001$, and maximum pain - 4.8/10 versus 7.1/10, $p=0.008$). Lastly, length of stay postoperatively was shorter for patients in the single-port compared to the multi-port group (0.67 days vs. 1.18 days, $p = 0.01$). (Table presented) Conclusion: Patients who undergo laparoscopic single-port robotic-assisted gynecologic surgeries experience significantly less pain postoperatively as compared to patients undergoing multi-port gynecologic surgeries. In addition, estimated blood loss is significantly lower and length of stay is significantly shorter in patients undergoing single-port robotic-assisted procedures. Patient satisfaction scores appear to be higher in this group. Of note, the difference in pain and satisfaction scores may be even greater given that single-port surgery patients were evaluated more often on post-operative day 0 as opposed to post-operative day 1 for the majority of multi-port surgery patients.

Fonseca VA, **Grunberger G**, Anhalt H, Bailey TS, Blevins T, Garg SK, Handelsman Y, Hirsch IB, Orzech EA, Roberts VL, Tamborlane W and Consensus Conference Writing C (2016). "Continuous glucose monitoring: A consensus conference of the American Association of Clinical Endocrinologists and American College of Endocrinology."

Endocrine Practice 22(8): 1008-1021.

[Request Form](#)

Department of Internal Medicine

Objective/Methods: Barriers to continuous glucose monitoring (CGM) use continue to hamper adoption of this valuable technology for the management of diabetes. The American Association of Clinical Endocrinologists and the American College of Endocrinology convened a public consensus conference February 20, 2016, to review available CGM data and propose strategies for expanding CGM access. Results: Conference participants agreed that evidence supports the benefits of CGM in type 1 diabetes and that these benefits are likely to apply whenever intensive insulin therapy is used, regardless of diabetes type. CGM is likely to reduce healthcare resource utilization for acute and chronic complications, although real-world analyses are needed to confirm potential cost savings and quality of life improvements. Ongoing technological advances have improved CGM accuracy and usability, but more innovations in human factors, data delivery, reporting, and interpretation are needed to foster expanded use. The development of a standardized data report using similar metrics across all devices would facilitate clinician and patient

understanding and utilization of CGM. Expanded CGM coverage by government and private payers is an urgent need. Conclusion: CGM improves glycemic control, reduces hypoglycemia, and may reduce overall costs of diabetes management. Expanding CGM coverage and utilization is likely to improve the health outcomes of people with diabetes.

Gaines N, Lavin JE and **Gillera JP** (2016). "Stress incontinence," In Lajiness M and Quallich S (ed). The Nurse Practitioner in Urology. Switzerland: Springer. pp: 237-249.

[Full-Text](#)

Department of Urology

Ganapini V, Jaurigue M, **Amin M, Ghaith G** and **Cappell MS** (2016). "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. ePub Ahead of Print.

[Full-Text](#)

Department of Pathology

Department of Internal Medicine

Geisinger JR and **Park DK** (2016). "Allograft bone: Uses in spinal surgery." Seminars in Spine Surgery 28(4): 190-195.

[Full-Text](#)

Department of Orthopedic Surgery

Giuliani M, Hope A, Guckenberger M, Mantel F, Peulen H, Sonke JJ, Belderbos J, Werner-Wasik M, Ye H and **Grills IS** (2016). "Stereotactic body radiation therapy in octo- and nonagenarians for the treatment of early-stage lung cancer." International Journal of Radiation Oncology Biology Physics. ePub Ahead of Print.

[Full-Text](#)

Department of Radiation Oncology

Gjeorgjievski M, Makki I, Khanal P, **Amin MB, Blenc AM**, Desai T and **Cappell MS** (2016). "Early, isolated duodenal mucosa-associated lymphoid tissue lymphoma presenting without symptoms or grossly apparent endoscopic lesions and diagnosed by random duodenal biopsies." Case Reports in Gastroenterology 10(2): 323-331.

[Full-Text](#)

Department of Pathology

Department of Internal Medicine

Gjeorgjievski M, Mogrovejo E, **Amin MB** and **Cappell MS** (2016). "Primary duodenal aspergillosis in a patient with alcoholic cirrhosis and poorly controlled diabetes mellitus." ACG Case Reports Journal 3(4): 2.

[Full-Text](#)

Department of Pathology

Department of Internal Medicine

Gjeorgjievski M, Orosey M, Hakim S, Mogrovejo E and **Cappell M** (2016). "Choledochoduodenal fistula in a patient with a percutaneous endoscopic gastrostomy tube." American Journal of Gastroenterology 111(Sup): S521-S522.

[Request Form](#)

Department of Internal Medicine

Golenbiewski J and **Halalau A** (2016). "Discordance rates of bilateral temporal artery biopsies: A retrospective analysis." Arthritis and Rheumatology 68(S10): 1187-1188.

[Full-Text](#)

Department of Internal Medicine

Background/Purpose: Previous retrospective studies have suggested that simultaneous bilateral temporal artery biopsy (TAB) may lead to increased detection rates of giant cell arteritis (GCA). The term discordance represents one unilateral positive biopsy combined with one contralateral negative biopsy. Cases of

discordance, through identification of false negatives, support the rationale for obtaining bilateral TAB. Reported discordance rates vary, ranging from 3 to 15 percent. Given the serious outcomes of untreated disease, including permanent blindness, establishing a consensus approach that increases detection of GCA is necessary. We aimed to identify cases of discordant temporal artery biopsies and to examine the role of performing simultaneous bilateral TAB in increasing the diagnostic yield of GCA. Methods: Procedure codes for TAB were used to identify patients who underwent simultaneous bilateral temporal artery biopsies at three hospitals between the years 2009 and 2013. The following data was collected: biopsy results and length, age, gender, ESR and CRP levels. Patient data and biopsy results were compared based on their respective group: bilateral positive biopsies, bilateral negative biopsies and discordant biopsies. A combined positive biopsy group (bilateral positive biopsies and discordant biopsies) was additionally compared to the bilateral negative biopsy group. A separate chart review was performed for discordant biopsies to identify cases in which bilateral TAB may have increased the diagnostic yield of GCA. Results: 181 patients were identified that had undergone simultaneous bilateral TAB. The mean age of the positive bilateral biopsy group was 78.2 years compared to 70.3 years for the negative bilateral biopsy group ($p < 0.001$). The mean age of the combined positive biopsy group was 77.1 years compared to 70.3 years for the biopsy negative group ($p < 0.001$). 38/181 (21%) of patients had biopsy proven GCA. The overall discordance rate was 3.8% (7/181), comprising 18.4% (7/38) of the biopsy positive group. Biopsy lengths did not differ between groups. Average CRP values for the combined positive biopsy group were 6.4 mg/dL when compared to the biopsy negative group of 5.5 mg/dL ($p = 0.04$). When considering localizing symptoms of the discordant group, bilateral TAB would have increased the yield of diagnosis definitively in one case (1/181 (0.5%) or 1/38 (2.6%) combined positive biopsy category alone). This may have increased to 3.3% (6/181) overall or 15.8% (6/38) as part of the combined positive group when considering best possible outcomes. Conclusion: Bilateral TAB in patients with suspected giant cell arteritis may increase the diagnostic yield in a small number of overall cases. This increase may be more significant when considering the low prevalence of GCA diagnosis. Our results are consistent with previously reported discordance rates. The potential increase in diagnostic yield by performing bilateral TAB may have clinical significance given the negative implications of untreated disease and the side effects of long-term glucocorticoid therapy. Increasing age and CRP values may be associated with an increased likelihood of temporal arteritis.

Hakim S, **Amin M** and **Cappell MS** (2016). "Limited, local, extracolonic spread of mucinous appendiceal adenocarcinoma after perforation with formation of a malignant appendix-to-sigmoid fistula: Case report and literature review." World Journal of Gastroenterology 22(38): 8624-8630.

[Full-Text](#)

Department of Pathology

Department of Internal Medicine

Hakim S, Desai T and **Cappell MS** (2016). "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. ePub Ahead of Print.

[Full-Text](#)

Department of Internal Medicine

Hakim S, Gjeorgjievski M, Mogrovejo E, Orosey M and **Cappell M** (2016). "Simultaneous esophageal and recto-sigmoid poorly differentiated adenocarcinoma with different MLH1 stain." American Journal of Gastroenterology 111(Sup): S641-S642.

[Request Form](#)

Department of Internal Medicine

Hakim S, Gjeorgjievski M, Purohit T, **Bortman J** and **Cappell M** (2016). "Pseudoaneurysm of the left gastric artery causing portal gastropathy and upper gastrointestinal bleeding." [American Journal of Gastroenterology](#) 111(Sup): S1024.

[Request Form](#)

Department of Internal Medicine

Hakim S, Orosey M, Purohit T and **Bortman J** (2016). "Spontaneous choledochoduodenal fistula with purulent discharge treated endoscopically." [American Journal of Gastroenterology](#) 111(Sup): S1301.

[Request Form](#)

Department of Internal Medicine

Hashmi A, Guckenberger M, Kersh R, Gerszten PC, Mantel F, **Grills IS**, Flickinger JC, Shin JH, **Fahim DK**, Winey B, Oh K, John Cho BC, Létourneau D, Sheehan J and Sahgal A (2016). "Re-irradiation stereotactic body radiotherapy for spinal metastases: A multi-institutional outcome analysis." [Journal of Neurosurgery: Spine](#) 25(5): 646-653.

[Request Form](#)

Department of Radiation Oncology

Department of Neurosurgery

Henke PK, Park YJ, Hans S, **Bove P**, Cuff R, Kazmers A, Schreiber T, Gurm HS and Grossman PM (2016). "The association of peri-procedural blood transfusion with morbidity and mortality in patients undergoing percutaneous lower extremity vascular interventions: Insights from BMC2 VIC." [PloS One](#) 11(11): 1-17.

[Full-Text](#)

Department of Surgery

Ho AG, Gowda AL and **Michael Wiater J** (2016). "Evaluation and treatment of failed shoulder instability procedures." [Journal of Orthopaedics and Traumatology](#) 17(3): 187-197.

[Full-Text](#)

Department of Orthopedic Surgery

Management of the unstable shoulder after a failed stabilization procedure can be difficult and challenging. Detailed understanding of the native shoulder anatomy, including its static and dynamic restraints, is necessary for determining the patient's primary pathology. In addition, evaluation of the patient's history, physical exam, and imaging is important for identifying the cause for failure after the initial procedure. Common mistakes include under-appreciation of bony defects, failure to recognize capsular laxity, technical errors, and missed associated pathology. Many potential treatment options exist for revision surgery, including open or arthroscopic Bankart repair, bony augmentation procedures, and management of Hill Sachs defects. The aim of this narrative review is to discuss in-depth the common risk factors for post-surgical failure, components for appropriate evaluation, and the different surgical options available for revision stabilization. Level of evidence Level V.

Hothem Z, Simon R, Barnes W, Mohammad A, Sevak S, **Ziegler K**, Iacco A and **Janczyk R** (2016). "Effects of repealing the motorcycle helmet law in Michigan." [American Journal of Surgery](#). ePub Ahead of Print.

[Full-Text](#)

Department of Surgery

Background: In 2012, Michigan repealed its universal helmet law. Our study assessed the clinical impact of this repeal. Methods: Our trauma database was queried retrospectively for 2 motorcycle riding seasons before and 3 seasons after repeal. On-scene death data was obtained from the Medical Examiner. Results: Helmet use in hospitalized patients decreased after the helmet law repeal. Non-helmeted patients had a significant increased rate of head injury. Non-helmeted patients were more likely to die during hospitalization. While, helmet use and drugs/alcohol status significantly affected the risk for head injury, only drug/alcohol had a significant effect on overall mortality. Conclusions: Following helmet law repeal, helmet use has decreased. Helmet status and drug/alcohol use was found to significantly increase risk of head injury. Although overall mortality was only affected by drug/alcohol use, non-helmeted patients did have a

higher inpatient mortality. These findings deserve furthermore study and may provide a basis for reinstating the universal helmet law.

Hsu J, Rayess N, Rahimy E, Shah C, **Wolfe JD**, Chen E, DeCroos FC and Garg S (2016). "Comparison of post-injection endophthalmitis rates and characteristics following intravitreal injections of bevacizumab versus ranibizumab versus aflibercept." *Investigative Ophthalmology and Visual Science* 57(12): 3.

[Full-Text](#)

Department of Ophthalmology

Hwang KS, Chow N, Goukasian N, Nho K, Saykin AJ and Apostolova LG (2016). "Predicting cognitive decline and brain amyloidosis using cognitive and peripheral blood gene expression measures." *Alzheimer's and Dementia* 12(7): P720-P721.

[Full-Text](#)

OUWB Medical Student Author

Background: With over 20 AD risk genes discovered and replicated in large genome-wide associated studies, we still cannot fully explain the genetic heritability of AD. The missing heritability may be explained by mechanisms that result in aberrant transcription of these genes. Methods: Peripheral blood mRNA, neuropsychological testing, and ApoE4 genotype were obtained from 108 mild cognitive impairment (MCI) and 52 cognitively normal controls (NC). 70 subjects underwent F18-flutemetamol PET scans. Baseline log₂-transformed mRNA levels were correlated with hippocampal volume and ranked by the absolute value of their association. We explored the 3D association between the top 100 mRNA transcripts with hippocampal radial distance and cortical thickness. The top 25 transcripts that showed an AD-like pattern of association with hippocampal and/or cortical atrophy, MMSE, Trails B, CVLT-delayed recall and ApoE4 genotype were used to develop a multimodal biomarker classifier for predicting baseline diagnosis (NC vs. MCI), future conversion from MCI to dementia and brain amyloidosis (defined as global PET standard uptake value ratio ≥ 1.27 after normalization to whole cerebellum). We used a support vector machine (SVM) algorithm to build classifiers with leave-one-out cross validation. Results: The NC vs. MCI classifier selected 7 mRNA transcripts and achieved an accuracy of 73.8% and an area under the curve (AUC) of 0.70. The addition of the three neuropsychological test scores improved its accuracy to 86.9% with an AUC=0.92 (Figure 1A-B). The MCI conversion classifier achieved an accuracy of 79.3% and AUC= 0.67 with the selected 11 gene transcripts, age and sex as predictors. The addition of neuropsychological measures likewise increased its accuracy and AUC to 85.7% and 0.87, resp. (Figure 1C-D). The brain amyloidosis classifier selected 9 mRNA transcripts and sex with an accuracy of 83.5% and an AUC=0.84. The addition of ApoE4 genotype, which has been shown to be strongly associated with brain amyloidosis, did not result in significant improvement of the classifier's accuracy and AUC (accuracy =84.7%, AUC=0.87) (Figure 1E-F). Conclusions: Automated multimodal biomarker classifiers using cognitive measures and peripheral mRNA levels show promise for predicting MCI conversion and brain amyloidosis. Identification of abnormalities in peripheral blood might lead to noninvasive tests for presymptomatic AD diagnosis (Figure Presented).

Hypes SM, Abbey A, Yonekawa Y and **Wolfe JD** (2016). "Exacerbation of macular edema associated with hyperbaric oxygen therapy." *Investigative Ophthalmology and Visual Science* 57(12): 2.

[Full-Text](#)

Department of Ophthalmology

Ippolito J, Luo J, **Chinnaiyan P** and Rubin J (2016). "Identification of a prognostic sexual dimorphism in glioma glycolysis." *Neuro-Oncology* 18(Sup 6): vi100-vi101.

[Full-Text](#)

Department of Radiation Oncology

Sex differences are present in tumor incidence and mortality and independent of age or race. In many cancers, males not only have a higher incidence but also exhibit poorer response to therapy. In a recent study, both lower grade gliomas and glioblastomas were said to exhibit a "weak sex effect" based upon global transcriptome-level data obtained from The Cancer Genome Atlas (TCGA). Given known sex differences

in metabolism and the established positive correlation between fluorodeoxyglucose (FDG) uptake and glioma grade and survival, we hypothesized that male gliomas would have enhanced glycolytic activity relative to females and therefore exhibit a "glycolytic" transcriptome. We re-analyzed low grade glioma data from TCGA, targeted to transcripts encoding hexose transport, glycolysis, and lactate export. We identified the presence of a robust sexual dimorphism in glycolysis where males with high glycolytic transcript expression (54% of all males) exhibited significantly poorer overall and progression free survival than females followed by males with low glycolytic transcript expression. Moreover, we discovered specific genomic associations associated with the male "high glycolytic" group. Specifically, the presence of IDH1 and TP53 mutations conferred significantly better survival within the male "high glycolytic" group and these same genetic alterations were not associated with differences in either the male "low glycolytic" or female groups. Moreover, deep deletions of CDKN2A, CDKN2B and MTAP were significantly enriched in the male "high glycolytic" group relative to the male "low glycolytic" group that conferred significantly worse survival. The transcriptome studies were validated with metabolome-level data of human glioma specimens demonstrating enhanced glycolytic metabolite levels in males relative to females. Together, our findings represent a previously uncharacterized phenomenon that may pave the way toward a "sex-based workflow" for stratification employing genomics, metabolomics and metabolic PET imaging.

Jacob J, Bahoura L, Zintsmaster M and **Yadavalli S** (2016). "Imaging features of complications of intramuscular injections." *Emergency Radiology* 23(6): 581.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Learning Objectives/Aims: 1. Recognize presenting symptoms of complications related to intramuscular injections. 2. Understand the strengths of various imaging modalities and techniques in the evaluation of complications of intramuscular injections. 3. Learn to recognize the imaging features of some of the commonly seen complications related to intramuscular injections that may present in the emergency setting. Background: Intramuscular injection is a routine route of delivery of a variety of medications ranging from vaccinations to drugs that are repeatedly administered in a scheduled manner. Although this is a relatively safe and effective method of medication administration, insufficient knowledge of the surrounding anatomy, improper technique, or repeated injections at the same site can lead to serious complications. Some of the complications that may be seen in the emergency setting include, fat necrosis, abscess formation, development of hematoma, skin necrosis, nerve injury, or muscle or joint contractures. It is important for the radiologist to be familiar with imaging features of some of the complications using different modalities. This knowledge is valuable in aiding clinicians to arrive at an accurate diagnosis and to institute an appropriate treatment plan without delay. Content: The exhibit will be case-based and include examples of the more commonly encountered complications that may be seen with intramuscular injections. The advantages of using different imaging modalities, including ultrasound, CT and MRI in evaluation of these complications in the emergency setting will be discussed. It is important to recognize the imaging features of these complications and to avoid misdiagnosis. For example, a patient with repeated intramuscular injections may present with pain and a palpable lump at the site of injection. This mass may be the result of muscle contracture and should not be mistaken for a malignant tumor. Summary: 1. Important for radiologists to recognize complications arising from intramuscular injections, a relatively safe route of medication delivery that is routinely used in all age groups. 2. Awareness of the more common complications of this method of medication administration and their imaging findings can help the radiologist in making a quick and accurate diagnosis.

Jae SY, Bunsawat K, Fadel PJ, Fernhall B, Choi YH, Park JB and **Franklin BA** (2016). "Attenuated heart rate recovery after exercise testing and risk of incident hypertension in men." *American Journal of Hypertension* 29(9): 1103-1108.

[Full-Text](#)

Department of Internal Medicine

Jae SY, **Franklin BA**, Schmidt-Trucksass A, Kim DK, Choi YH and Park JB (2016). "Relation of cardiorespiratory fitness to risk of subclinical atherosclerosis in men with cardiometabolic syndrome." [American Journal of Cardiology](#) 118(9): 1282-1286.

[Full-Text](#)

Department of Internal Medicine

Jae SY, Kurl S, Laukkanen JA, **Franklin BA**, Choi YH and Fernhall B (2016). "Cardiorespiratory fitness attenuates obesity related risk of coronary artery calcification." [European Heart Journal](#) 37: 334.

[Full-Text](#)

Department of Internal Medicine

Jayaschandran V, Mariscal ES, Patel V, Mina N and **Dalal B** (2016). "Hot tub lung without microbiologic evidence of non-tuberculous mycobacterium." [Chest](#) 150(4): 943A.

[Full-Text](#)

Department of Internal Medicine

INTRODUCTION: Hot Tub Lung is a hypersensitivity pneumonitis like disease from exposure to Non-Tuberculous Mycobacterium (NTM) contaminating hot tub water. We describe here a case with biopsy highly suggestive of Hot Tub Lung, but with no microbiologic evidence of NTM CASE PRESENTATION: 70-year-old, immunocompetent, African American female with history of chronic dyspnea and hypoxia presented with worsening dyspnea and cough. She had recurrent hospital admissions in the preceding months with similar presentation, which were managed as COPD exacerbations. PFT results revealed restrictive pattern and no obstruction. Chest CT and HRCT both showed diffuse, interstitial pattern with fibrosis and traction bronchiectasis predominantly in upper lobes. Borderline enlargement of mediastinal lymph nodes were noted. Bronchoscopy, BAL, trans-bronchial biopsy and endobronchial ultrasound guided trans-bronchial needle aspiration were negative for sarcoidosis. BAL demonstrated predominantly macrophages without evidence of infection. An open lung biopsy showed patchy chronic inflammation with few eosinophils, multiple foci of atypical adenomatous hyperplasia with non-necrotizing granulomas in interstitium and airspace suggestive of hypersensitivity pneumonitis (HP). The granulomas were larger and well-formed than those typically seen in HP and resembled a pathologic picture seen in hot tub lung disease. HP panel for allergens were negative. On inquiring for exposure, patient reported use hot pool therapy twice (for joint pains), for 12 weeks, around the time of onset of dyspnea exacerbations. She also had exposure to hot pool 30 years ago. However, BAL specimen and lung biopsy were negative for AFB. DISCUSSION: The unique histopathology seen in hot tub pneumonitis differentiates it from other hypersensitivity pneumonitis and sarcoidosis. This is characterized by non-necrotizing granulomas in centri-lobular and bronchocentric distribution. Although microbiological data is critical, IDSA guidelines recommend that the characteristic histopathology alone may be sufficient to raise suspicion of diagnosis, as is the case in our patient. It is also interesting that our patient had no resolution of symptoms despite discontinuing hot tub exposure. We believe this could be due to two reasons. First, a source other than hot tub as the precipitant; as a matter of fact there have been reports of hot tub pneumonitis from exposure to shower. Second, disease had progressed enough to leave permanent lung damage and fibrosis. CONCLUSIONS: To our knowledge, this is the first reported case of a biopsy picture highly suggestive of hot tub pneumonitis without corroborating microbiologic evidence.

Johannesen KM, Wolf M, Masnada S, Rubboli G, Gardella E, Milh M, Villard L, Mignot C, Lardennois C, Bourel-Ponchel E, Nava C, Lesca G, Gérard M, Perrin L, Doummar D, Auvin S, Miranda MJ, Brilstra E, Knoers N, Docker M, Bast T, Loddenkemper T, Wong-Kisiel L, Baumeister FM, Fazeli W, Striano P, Kurlemann G, Klepper J, Thoene JG, **Arndt DH**, Schmitt-Mechelke T, Maier O, Muhle H, Wical B, Finetti C, Bruckner R, Pietz J, Golla G, Jillella D, Afenjar A, Linnet KM, Charles P, Öiglanc-Slik E, Mantovani JF, **Deprez M**, Scalais E, Lagae L, Nikanorova M, Hjalgrim H, Depienne C, Scheidecker S, Kremer V, Doray B, Alembik Y, Ceulemans B, Lederer D, Dorn T, Helbig KL, Hardies K, Stamberger H, De JP, Weckhuysen S, Lemke JR, Helbig I, Kluger G and Møller RS (2016). "Clinical heterogeneity and its potential therapeutic implications in children with scn2a-related disorders." [Epilepsia](#) 57(Sup 2): 114-115.

[Full-Text](#)

Department of Pediatrics

Purpose: SCN2A encodes a voltage-gated sodium channel, and mutations in this gene have long been associated with different types of epilepsy, from Benign Familial Neonatal/Infantile Seizures (BFNIS) to Epileptic Encephalopathies (EEs), as well as autism and Intellectual Disability (ID) without epilepsy. We aimed to delineate the phenotypic spectrum and provide evidence on optimal treatment. Methods: A systematic literature review was performed to retrieve previously published cases. We performed next generation sequencing of SCN2A in 416 patients with a range of childhood onset epilepsies including epileptic encephalopathies. In addition, we recruited further patients with SCN2A mutations through an international epilepsy genetics network. Results: We collected 105 previously published cases, and through our screening cohort of 416 patients we identified 9 cases with a de novo SCN2A mutation (2.1%). In addition, we recruited 50 novel cases from our international epilepsy genetics network. The phenotypic spectrum ranged from BNIS to EE, with the majority of cases having unspecified epileptic encephalopathy (30%) or specific epileptic syndrome (30%), such as Ohtahara Syndrome. 20% had a self-limiting epilepsy, and 20% had intellectual disability with or without autism. Data on treatment showed a good response to sodium channel blockers, especially with early seizure onset; 19/24 patients, who became seizure free, had seizure onset before day 10 of life. We found mutational hotspots at several locations, most prominent at protein positions 263, 853 and 1,342, and mutations seemed to cluster in the transmembrane domains, however, no clear overall genotype-phenotype correlation emerged. Conclusion: With this large cohort, SCN2A stands out as one of the major genetic causes of childhood onset epilepsies. The patients present a wide phenotypic spectrum from BFNIS to severe EE, and it should be kept in mind that patients with very early seizure onset might benefit from treatment with SCBs.

Jones PM and **Hafron J** (2016). "Diagnosis and management of localized prostate cancer," In Lajiness M and Quallich S (ed). The Nurse Practitioner in Urology. Switzerland: Springer. pp: 295-307.

[Full-Text](#)

Department of Urology

Joyce BL and **Swanberg SM** (2016). "Using backward design for competency-based undergraduate medical education," In Stefaniak J (ed). Advancing Medical Education Through Strategic Instructional Design. Hershey, PA: IGI Global. pp: 53-76.

[Request Form](#)

Department of Biomedical Sciences (OU)

Medical Library

Kane JL, **Krueger SA**, Hanna A, Raffel TR, **Wilson GD**, Madlambayan GJ and **Marples B** (2016). "Tumor microenvironment response and bone marrow cell migration after pulsed radiotherapy." Radiotherapy and Oncology 119(Sup 1): S20.

[Full-Text](#)

Department of Radiation Oncology

Purpose or Objective: Recent studies have shown that alterations in the pattern of radiation delivery, such as pulsed radiotherapy (PRT), can produce significant changes to the tumor microenvironment. Given the positive effects of PRT on maintaining tumor vasculature, we hypothesized that PRT treatment would allow tumor microenvironments to remain more oxygenated and result in better overall tumor killing compared with SRT. We further postulated that this effect would be associated with decreased tumor hypoxia, leading to lower vascular endothelial growth factor (VEGF) and stromal derived factor-1 alpha (SDF-1 α) production and subsequently lower recruitment of bone marrow derived cells (BMDCs) in PRT-irradiated tumors.

Material and Methods: Subcutaneous Lewis lung carcinoma (LLC) tumors were established in C57BL/6 mice. Tumors were allowed to grow to 100-200mm³ before irradiation with a 160 kVp Faxitron cabinet (HVL: 0.77 mm Cu) using a dose rate of 0.69 Gy/min. SRT or PRT was given to 20 Gy at 2 Gy/day using a 5 day-on, 2 day-off schedule to mimic clinical delivery. Tumors were harvested 2-3 days post treatment.

Radiation-induced changes in the tumor microenvironment were examined using flow cytometry and antibody-specific histopathology. Normal tissue effects were determined using non-invasive 18F-FDG

PET/CT and MR imaging after naïve animals were given whole-lung irradiation to 40 Gy using the same 2 Gy/day regimens. Results: PRT was more effective than SRT at reducing tumor growth rate ($0.24 \pm 0.02 \text{ mm}^3/\text{day}$ and $0.67 \pm 0.06 \text{ mm}^3/\text{day}$ respectively; $p < 0.0001$). Histopathology analysis showed a significant reduction in the levels of Ki-67 ($13 \pm 8\%$), hypoxia ($8 \pm 1\%$), VEGF ($3.5 \pm 1\%$) and SDF-1 α ($4.2 \pm 1.5\%$) as well as a concomitant decrease in CD45+ BMDC migration ($7.8 \pm 2.2\%$) after PRT when compared to SRT. Higher vessel density was also observed in PRT irradiated tumors. No short-term differences were observed in normal lung tissue after PRT or SRT although all irradiated animals demonstrated higher levels of inflammation than controls. Conclusion: Using a rapidly proliferating LLC allograft model, we have found evidence for improved tumor killing with PRT relative to SRT due to vascular maintenance. PRT irradiated tumors exhibited slower growth rate and reduced hypoxia coincident with loss of supportive mechanisms utilized by tumors in low oxygen microenvironments, such as angiogenesis and recruitment of BMDCs. This study demonstrates the efficacy of PRT and highlights the importance of microenvironment responses during tumor radiotherapy. We conclude that PRT represents an improved treatment strategy that may result in better overall patient outcomes with little alteration in normal tissue toxicity.

Kim IK, Zuckerbraun N, Kou M, Vu T, **Levasseur K**, Yen K, Chapman J, Doughty C, McAneney C, Zaveri P and Hsu D (2016). "Essentials of pediatric emergency medicine fellowship: Part 6: Program administration." [Pediatric Emergency Care](#) 32(10): 726-730.

[Full-Text](#)

Department of Emergency Medicine

This article is the sixth in a 7-part series that aims to comprehensively describe the current state and future directions of pediatric emergency medicine (PEM) fellowship training from the essential requirements to considerations for successfully administering and managing a program to the careers that may be anticipated upon program completion. This article provides a broad overview of administering and supervising a PEM fellowship program. It explores 3 topics: the principles of program administration, committee management, and recommendations for minimum time allocated for PEM fellowship program directors to administer their programs.

Lakshmanadoss U, **Wong WS**, **Kutinsky I**, Khalid MR, **Williamson B** and **Haines DE** (2016). "Figure-of-eight suture for venous hemostasis in fully anticoagulated patients after atrial fibrillation catheter ablation." [Indian Pacing and Electrophysiology Journal](#). ePub Ahead of Print.

[Request Form](#)

Department of Internal Medicine

Lau W, **Hanzel G**, **Safian R**, **Abbas A**, **Sakwa M** and **Shannon F** (2016). "Fascia Iliaca Compartment Block (FICB) and none to light sedation as an alternative minimalist approach to sedation for patients undergoing Transfemoral Transcatheter Aortic Valve Replacement (TF-TAVR): A single center 30-day outcome experience." [Journal of the American College of Cardiology](#) 68(18): B304.

[Full-Text](#)

Department of Anesthesiology

Department of Internal Medicine

Department of Surgery

BACKGROUND Transfemoral (TF) access for transcatheter aortic valve replacement (TAVR) has demonstrated efficacy and safety as compared to alternative transaortic (TAO) and transapical (TA) access. Early studies demonstrated the feasibility of minimalist approach (MA) for TF-TAVR using moderate sedation; however, large volume of local anesthetic and higher valve dislocation was observed as compared to general anesthesia (GA). A recent STS-ACC TVT Registry analysis demonstrated that a MA TF-TAVR has lower mortality, stroke, and shorter length of stay (LOS) vs. GA-TF TAVR. In the process of developing a MA-TAVR Program, we discovered a novel anesthetic approach that uses a fascia iliaca compartment block (FICB) and a deliberate range of none to light sedation, targeting a Richmond Agitation-Sedation Scale (RASS) between 0 (alert and calm), -1 (drowsy), and -2 (light sedation). The purpose of this strategy is to provide a more consistent procedural/post-procedural anesthesia and analgesia by minimizing the need for variable titration of

moderate sedation and reduce the need to infiltrate large quantity of local anesthetic to achieve optimal surgical condition during key portion of the TF-TAVR procedure. Whether this novel MA strategy using a FICB + none to light sedation is effective and safe as compared to GA for TF-TAVR is currently not known. METHODS Between January 2013 and May 2016, we evaluated 151 consecutive patients who underwent TF-TAVR using GA (n=79) and FICB+none/light sedation (n=72). We merged our institutional electronic record with the STS-ACC TVT Registry. Patients were assessed for 30-day mortality, stroke, perivalvular leak, new onset of atrial fibrillation, new permanent pacemaker, length of hospital stay, and blood transfusion. RESULTS CONCLUSION For TF-TAVR, FICB+none to light sedation is a safe alternative to GA, and is associated with less RBC transfusion, and shorter LOS vs. GA (Table Presented).

Le J, Grigorian A, Chen S, Kuo JJ, Fujitani RM and Kabutay NK (2016). "Novel endovascular technique for removal of adherent PICC." Journal of Vascular Access 17(6): e153-e155.

[Request Form](#)

OUWB Medical Student Author

Lerchenfeldt S and **Nyland R** (2016). "Learning technique utility and preferences among second-year medical students: A pilot study of general and pre-exam study habits." MedEdPortal 5(3): 10.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Purpose: The purpose of this pilot study was to assess student preferences for different learning techniques and evaluate the efficacy of those learning techniques by correlating student use to academic performance. Methods: Second-year medical students reported their use of eight learning techniques for general study and pre-exam preparation through an optional survey during the final organ system course of an integrated curriculum. Optional quizzes were provided to assess academic performance. Results: Students preferred the lowest utility learning techniques, consuming 51% of their general study time. Two of the eight learning techniques, self-explanation and imagery for text, showed greater utility with our medical students than has been previously reported in general and undergraduate education. Significant changes were observed in student preference for three learning techniques as students approached an exam. Preference for highlighting (low utility) decreased, and preference for practice testing (high utility) and self-explanation (high utility) increased significantly during pre-exam study. Conclusions: Although student preference shifted toward higher utility techniques as their exam approached, they still spent more than half of general study time on learning techniques that had strong, negative correlations to

Levy PD, Willock RJ, Burla M, Brody A, Mahn J, Marinica A, **Nasser SA** and Flack JM (2016). "Total antihypertensive therapeutic intensity score and its relationship to blood pressure reduction." Journal of the American Society of Hypertension 10(12): 906-916.

[Full-Text](#)

Department of Orthopedic Surgery

Li X and Kim D (2016). "Behavioral and psychiatric manifestations of delirium caused by cerebral hypo-perfusion from overaggressive anti-hypertensive therapy and carotid stenosis in a geriatric patient with mild neurocognitive disorder." American Journal of Geriatric Psychiatry 24(3): S72-S73.

[Full-Text](#)

OUWB Medical Student Author

Introduction: The treatment of hypertension in the geriatric population is often a double-edged sword especially in those with neuro-cognitive deficits. On one hand, chronic untreated hypertension that begins in midlife could cause irreversible brain damage resulting in dysregulation and cognitive impairment that ultimately results in major neurocognitive disorder. Therefore, what is considered a normal or low blood pressure in individuals with cognitive impairment may not necessarily mean a well-controlled blood pressure. Instead, it may hinder sufficient perfusion of a damaged brain. The medical community has also been reluctant to use strict blood pressure control especially for patients with major neurocognitive disorder because these patients have low cerebral blood flow at baseline. In addition, the cerebral dys-regulation of

perfusion can result in cerebral blood flow insufficiency and its accompanying consequences such as aggression, depression and cognitive impairment, depending on the location of the perfusion mismatch. Moreover, it has been shown that aggressive antihypertensive therapy in patients with minor or major neurocognitive disorders may negatively affect cognition and cause delirium from eliciting hypoperfusion (watershed) strokes. Methods: (N/A. Case report). Results: An 82 year-old Caucasian female with a history of depression, hypertension, and hyperlipidemia was referred to our outpatient gero-psychiatry program four months prior to her hospitalization, for troubles with her IADLs. On testing, she had no focal neurological issues, but a MOCA of 19/30 indicated minor neurocognitive disorder. Neuroimaging revealed multiple chronic, lacunar infarcts. Four months later, she was referred to our voluntary inpatient facility when staff at her independent living facility reported erratic mood, irritability, agitation, along with poor medication compliance. During the first few days of her inpatient hospitalization, she demonstrated phases of irritability, confusion, and even combativeness with staff. Her new MOCA of 12/30 also revealed a drastic decline from her baseline MOCA of 19/30 four months prior. On day four, an MRI was also ordered, which showed acute and sub-acute right hemisphere infarct in watershed distribution within both the parietal lobe PCA/MCA watershed territory and along the ACA/MCA watershed territory. At this time, we also discontinued both of the anti-hypertensives that had been recently started by her PCP. Furthermore, an accompanying carotid duplex showed significant right internal carotid artery occlusion of >90% and moderate left internal carotid artery occlusion of <70%. Following a successful, endovascular stent placement in the right carotid, the patient returned to our unit with improved mood and decreased irritability and agitation during the final course of her stay. Her neuropsychology testing prior to discharge showed that the patient had regained her baseline cognitive function of 18/30. However, patient was discovered to have new onset hemi-sided neglect. Conclusions: While the patient has had a history of depression and was recently diagnosed with mild neurocognitive disorder, her current symptoms could not be explained by her past history. Her bouts of drastic cognitive decline, agitation, confusion, and labile behavior most resemble delirium. It is likely that the overly-aggressive blood pressure treatment and possibly her severe carotid stenosis caused the multiple, acute hypo perfusion ischemia. Studies examining the relationship between antihypertensive drugs and neurocognitive disorders have yielded conflicting results. Recent reports showed a decreased incidence of cognitive decline in treated hypertensive patients, while other studies failed to evidence an association. Nevertheless, it is very possible that the excessive antihypertensive therapy with two medications led to insufficient cerebral perfusion in light of her severely occluded carotids, created acute lesions in the watershed area and caused the behavioral disturbances. This hypothesis is also consistent with the patient's neuropsychology testing after the carotid stenting, which revealed no additional cognitive decline. Thus, using over-aggressive blood pressure control in patients with minor and major neurocognitive disorders and especially with vascular risk factors may increase the possibility of delirium.

Maerz T, Newton MD, Osborne JD, Gawronski KMB, **Baker K** and **Anderson K** (2016). "Cartilage thickness and surface roughness patterns in healthy and osteoarthritis knees: Novel 3D analysis of subjects from the osteoarthritis initiative." *Orthopaedic Journal of Sports Medicine* 4(7): 1-2.

[Full-Text](#)

Department of Surgery

Department of Orthopedic Surgery

Objectives: Three-dimensional (3D) magnetic resonance imaging (MRI) enables characterization of articular cartilage (AC) morphology. AC is traditionally analyzed using mean cartilage thickness (MCT), but OA can occur without drastic changes in MCT due to regions of both thickening and thinning, as shown in recent studies. Our group recently developed a method to assess 3D AC morphology in terms of both MCT and surface roughness (Sa) using mesh parameterization, an image processing technique that projects 3D data onto a 2D domain. The objective of this study was to apply this technique to characterize changes in MCT and Sa in subjects from the Osteoarthritis Initiative (OAI) with varying degrees of OA. Methods: Under institutional approval, image data was obtained from OAI. Inclusion criteria were availability of a baseline 3D double-echo steady state (DESS) MRI of the right knee and Kellgren-Lawrence (KL) score. Exclusion criteria were history of systemic testosterone, estrogen, GNRH, PTH, or bisphosphonate use, prior fracture, knee replacement, hyaluronic acid or steroid injections, and evidence of unreported knee injury or other anomaly

on x-ray review. From the resulting pool, 10 subjects (5 men and 5 women) were randomly selected from each KL grade (0 - 4). Using our parameterization method, AC regions of interest were isolated from the MRI stacks and converted to 2D height maps (Figure 1). MCT and normalized surface roughness (Sa) were calculated for the whole femur, whole tibia and individual compartments. Femurs and tibias of KL0, KL2 and KL4 subjects have been analyzed. Analysis of patellae and remaining KL grades is ongoing. Results were compared between groups using t-tests with $\alpha = 0.05$. Results: Representative KL0 and KL4 AC thickness maps are shown in Fig1A, B. Compared to KL0, KL4 exhibits thinning with adjacent thickening on the medial femoral condyle (MFC). There were no significant differences in MCT between KL grades in any femoral compartment. On the tibia, KL0 exhibits congruent AC with natively-thicker AC at the weight-bearing aspect. KL4 tibiae exhibit global thinning with a zone of severe thinning on the medial plateau (MP). Whole-tibia MCT of KL4 was significantly lower compared to KL2 and KL0 (Fig. 1D). In contrast to MCT, Sa was highly sensitive to compartment-dependent degeneration. In the whole femur, Sa was significantly higher in KL4 compared to both KL2 and KL0. On the MFC, Sa increased steadily with increasing KL grade (Fig1E), and the lateral condyle of KL4 exhibited higher Sa compared to KL0. No differences in Sa were observed on the trochlea. On the tibia, Sa was significantly elevated in KL4 compared to both KL0 and KL2 in all compartments (Fig1F). Conclusion: The presented technique enabled repeatable visualization, compartmental segmentation, and quantification of MCT and Sa of the whole joint. No differences in femoral MCT were found, which can be attributed to adjacent thickening and thinning. Femoral and tibial OA changes were detected more sensitively using Sa, with significant increases observed in the whole femur and both condyles and plateaux. Significant differences in Sa between KL0 and KL2 femurs indicate sensitivity of this technique to subtle changes in early OA. More sensitive characterization of compartmental and sub-compartmental morphologic changes associated with OA can increase our understanding of its progression and facilitate more sensitive early diagnosis.(Figure Presented).

Maini B, Moses J, **Dixon S**, Anderson M, Lombardi W, Eifer Møller J, Henriques J, Schafer A, Schreiber T, Ohman EM and O'Neill W (2016). "Global cVAD registry: A global initiative in percutaneous circulatory support From the cVAD steering committee on behalf of all cVAD investigators." Journal of the American College of Cardiology 68(18): B10.
[Full-Text](#)

Department of Internal Medicine

BACKGROUND Percutaneous circulatory support has an exponential growth within the last decade. In the era of evidence based medicine and appropriate use, having a systematic, standardized conduit for clinical data in "real world" medical setting becomes paramount. Objective: To build a comprehensive depository data collection system that monitors current usage and provides quality metrics to improve patient outcomes. **METHODS** The global cVAD registry is an ongoing, observational, multicenter registry that includes patients receiving the Impella devices in the daily, routine clinical care per institutional standards and treating physician's discretion. The registry is currently open in US, Canada, Europe and later in Japan. The registry collects standardized data on all patients supported with Impella devices (2.5, CP, 5.0/LD and RP) and all indications at the participating sites without preselection. Patient demographics, medical history, risk factors, procedural characteristics, hemodynamic parameters, angiographic and echocardiographic imaging data and outcomes up to 1 year are collected and entered into a one centralized electronic data capturing (EDC) system. Data is monitored against source documents for accuracy and the outcomes are adjudicated by an independent Clinical Event Committee. **RESULTS** Since 2009, a total of 61 sites were included in the registry enrolling a total of 2903 patients. The distribution by reason for Impella use is presented below: Totality of the data including patient characteristics and outcomes will be presented at the meeting. **CONCLUSION** Global cVAD registry is a unique endeavor in the field of percutaneous mechanical circulatory support spanning across all cardiology specialties. This vast repository of clinical data is likely to contribute to development of quality metrics and treatment algorithms to improve patient outcomes. (Table Presented).

Masson S, Villerot M and **Dalal B** (2016). "A rare case of hydromorphone-induced angioedema effectively managed by a difficult airway response team." A & A Case Reports 7(9): 188-189.

[Full-Text](#)

Department of Internal Medicine

Hydromorphone, unlike other opioids associated with histamine release, has never been reported to cause angioedema. We report a rare case of hydromorphone-induced angioedema in a 34-year-old woman with history of deep venous thrombosis and pulmonary embolism who presented with leg swelling and pain after trauma. Hydromorphone was administered with subsequent rapid development of stridor and edematous changes of the tongue, uvula, and surrounding mucosa. The difficult airway response team was activated, and the airway was secured by emergent awake fiberoptic intubation in the operating room. After being treated with antihistamines and steroids for 24 hours, the airway edema had resolved, leading to a successful extubation.

Matsumura M, Mintz GS, Kang SJ, Sum ST, Madden SP, Burke AP, **Goldstein J**, Parvataneni R, Stone GW, Muller JE, Virmani R and Maehara A (2016). "Intravascular ultrasound and near-infrared spectroscopic features of coronary lesions with intraplaque haemorrhage." European Heart Journal Cardiovascular Imaging. ePub Ahead of Print.

[Full-Text](#)

Department of Internal Medicine

AIMS: Intraplaque haemorrhage is considered a major contributor to lesion progression. We assessed coronary lesions with intraplaque haemorrhage using intravascular ultrasound (IVUS) and near-infrared spectroscopy (NIRS). METHODS AND RESULTS: We evaluated coronary arteries from autopsy hearts using 40MHz IVUS and NIRS and compared the imaging findings to histopathology. A total of 2324 2-mm long histological segments from 101 coronary arteries from 56 autopsy hearts were included. Intraplaque haemorrhage was found pathologically in 0.8% (18/2324) of segments. Segments with intraplaque haemorrhage had more fibroatheromas (FAs) with a greater IVUS plaque burden, a greater prevalence of IVUS echolucent zones, and a higher NIRS-lipid core burden index (LCBI) compared to segments without intraplaque haemorrhage (FAs: 72.2% vs. 18.3%, $P < 0.0001$; plaque burden: 59.7% [95% confidence interval: 55.5, 64.0] vs. 48.6% [45.8, 51.3], $P < 0.0001$; echolucent zones: 88.9% vs. 2.8%, $P < 0.0001$; NIRS-LCBI: 176 [88, 264] vs. 72 [53, 91], $P = 0.02$). The 16 IVUS superficial echolucent zones with intraplaque haemorrhage had more late FAs but shorter echolucent zone lengths (0.9 mm [0.7, 1.1] vs. 1.7 mm [1.5, 1.9], $P < 0.0001$) compared to 65 IVUS superficial echolucent zones without intraplaque haemorrhage. CONCLUSIONS: Intracoronary imaging features consistent with intraplaque haemorrhage included a greater plaque burden, a higher NIRS-LCBI, and a greater prevalence of IVUS echolucent zones compared to lesions without intraplaque haemorrhage.

McWilliams JP, Shah RP, Quirk M, White SB, Dybul SL, Ahrar J, Steele JR, Kwan SW, **Handel J**, Winokur RS, Gilliland CA and Durack JC (2016). "Standardized reporting in IR: A prospective multi-institutional pilot study." Journal of Vascular and Interventional Radiology 27(12): 1779-1785.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Meka S, Otoupalova E, Patel V, Cichewicz A and **Dalal B** (2016). "Rituximab: Friend or foe for PAH?" Chest 150(4): 1215A.

[Full-Text](#)

Department of Internal Medicine

INTRODUCTION: Rituximab is a monoclonal antibody that has recently shown promise as a treatment modality for pulmonary arterial hypertension (PAH) caused by connective tissue diseases such as systemic sclerosis. But can rituximab cause PAH? CASE PRESENTATION: A sixty eight year old male with a history of recurrent lymphoplasmacytic lymphoma treated with rituximab presented to the emergency room for progressive dyspnea and fatigue in the last month. He was hypoxic and physical exam demonstrated trace bilateral lower extremity edema. An echocardiogram showed an elevated right ventricular systolic pressure (RVSP) of 72mmHg. Pulmonary embolism was ruled out and an extensive infectious and rheumatologic workup was negative. A right heart catheterization (RHC) was performed, which revealed a right ventricular pressure of 74/7mmHg and pulmonary artery pressure (PAP) of 74/28mmHg with a mean of 49mmHg. The pulmonary capillary wedge pressure was 13mmHg with a pulmonary vascular resistance of 6 Woods units. Saturation study did not reveal any shunts. With adenosine administration during vasodilator testing, the

PAP decreased to 52/22mmHg with a mean of 39mmHg and Cardiac output went from 5.9 to 5.75 liters per minute (L/min). Of note, the PAP from a RHC performed a year prior to this presentation was 39/ 20mmHg. The patient was subsequently started on nifedipine, which improved his symptoms and oxygen requirement. DISCUSSION: In summary, this case presents rapid progression of PAH within the timespan of a year. Common causes of PAH such as obstructive lung disease or chronic left heart failure typically result in a much slower disease course and rarely cause such elevated PAP. Hence, the best explanation for the rapidity and severity of PAH in this case can be attributed to a drug-effect from rituximab, which he had received in the preceding months. Another learning point is that vasodilator testing during a RHC can provide a potential treatment option, which is valuable for a disease such as PAH where options tend to be limited. Although cardiac output declines from 5.9 to 5.75 L/min, this was not felt to be significant and the vasodilator test was still considered to be positive. CONCLUSIONS: Pulmonary arterial hypertension (PAH) as a result of rituximab therapy is extremely rare and has only been reported in one case so far. However, clinicians should remain vigilant of rapidly-progressive PAH as a possible adverse effect as this medication becomes more commonly used.

Mi M (2016). "Informal learning in medical education," In Stefaniak J (ed). Advancing Medical Education Through Strategic Instructional Design. Hershey, PA: IGI Global. pp: 225-244.

[Full-Text](#)

Medical Library

Micale MA, Embrey B, Macknis JK, Harper CE and Aughton DJ (2016). "Constitutional 560.49 kb chromosome 2p24.3 duplication including the MYCN gene identified by SNP chromosome microarray analysis in a child with multiple congenital anomalies and bilateral Wilms tumor." European Journal of Medical Genetics 59(12): 618-623.

[Full-Text](#)

Department of Pathology

Department of Pediatrics

Moise KJ, Gandhi M, Boring NH, O'Shaughnessy R, Simpson LL, Wolfe HM, Baxter JK, Polzin W, Eddleman KA, Hassan SS, Skupski DW, Ryan G, Walker M, Lam G, Brown R, Skoll MA, Robinson C, Sheikh A, **Bronsteen R**, Plante LA, McLennan G, Chikova A and Paladino T (2016). "Circulating cell-free DNA to determine the fetal RHD status in all three trimesters of pregnancy." Obstetrics and Gynecology 128(6): 1340-1346.

[Full-Text](#)

Department of Obstetrics and Gynecology

OBJECTIVE: To estimate the accuracy of a new assay to determine the fetal RHD status using circulating cell-free DNA. METHODS: This was a prospective, observational study. Maternal blood samples were collected in each trimester of pregnancy in 520 nonalloimmunized RhD-negative patients. Plasma samples were analyzed for circulating cell-free DNA using the SensiGENE RHD test, which used primers for exons 4 and 7 as previously described and incorporated a new primer design for exon 5 of the RHD gene. Neonatal serology for RhD typing using cord blood at birth was undertaken and results were stored in a separate clinical database. After unblinding the data, results of the DNA analysis were compared with the neonatal serology. RESULTS: Inconclusive results secondary to the presence of the RHD pseudogene or an RHD variant were noted in 5.6%, 5.7%, and 6.1% of the first-, second-, and third-trimester samples, respectively. The incidence of false-positive rates for RhD (an RhD-negative fetus with an RHD-positive result) was 1.54% (95% confidence interval [CI] 0.42-5.44%), 1.53% (CI 0.42-5.40%), and 0.82% (CI 0.04-4.50%), respectively. There was only one false-negative diagnosis (an RhD-positive fetus with an RHD-negative result), which occurred in the first trimester (0.32%; 95% CI 0.08-1.78%). Genotyping for mismatches across repeated samples revealed that this error was related to mislabeling of samples from two patients collected on the same day at one of the collection sites. Overall test results were in agreement across all three trimesters ($P > .99$). CONCLUSION: Circulating cell-free DNA can accurately predict the fetal RhD status in all three trimesters of pregnancy.

Newton MD, Davidson AA, Pomajzl R, Seta J, **Kurziel MD** and **Maerz T** (2016). "The influence of testing angle on the biomechanical properties of the rat supraspinatus tendon." Journal of Biomechanics 49(16): 4159-4163.

[Full-Text](#)

Department of Surgery

Nickel JC, Gorin MA, Alan WP, Loeb S, Ellen S, **Chancellor MB**, Assimos DG, Brawer MK and Brucker BM (2016). "Best of the 2016 AUA Annual Meeting: Highlights From the 2016 American Urological Association Annual Meeting, May 6-10, 2016, San Diego, CA." Reviews in Urology 18(3): 159-173.

[Full-Text](#)

Department of Urology

Nicks BA, Shah MN, Adler DH, **Bastani A**, Baugh CW, Caterino JM, **Clark CL**, Diercks DB, Hollander JE, Malveau SE, Nishijima DK, Stiffler KA, Storrow AB, Wilber ST, Yagapen AN and Sun BC (2016). "Minimizing attrition for multisite emergency care research." Academic Emergency Medicine. ePub Ahead of Print.

[Full-Text](#)

Department of Emergency Medicine

Loss to follow-up of enrolled patients (a.k.a. attrition) is a major threat to study validity and power.

Minimizing attrition can be challenging even under ideal research conditions, including the presence of adequate funding, experienced study personnel, and a refined research infrastructure. Emergency care research is shifting toward enrollment through multisite networks, but there have been limited descriptions of approaches to minimize attrition for these multicenter emergency care studies. This concept paper describes a stepwise approach to minimize attrition, using a case example of a multisite emergency department prospective cohort of over 3,000 patients that has achieved a 30-day direct phone follow-up attrition rate of <3%. The seven areas of approach to minimize attrition in this study focused on patient selection, baseline contact data collection, patient incentives, patient tracking, central phone banks, local enrollment site assistance, and continuous performance monitoring. Appropriate study design, including consideration of these methods to reduce attrition, will be time well spent and may improve study validity.

Niravel B, Ziemba S, Ferguson C, Holden S, **Fletcher C** and **Millward P** (2016). "Reducing pRBC wastage through the use of refrigerated gel packs during pneumatic tube transport." Transfusion 56(Sup 4): 214A-215A.

[Request Form](#)

Department of Pathology

Norat B, Mukherjee D, Scola D and **Gebara S** (2016). "Adolescent with obscure gastrointestinal bleeding: Angiodysplasia requiring arteriogram for diagnosis." American Journal of Gastroenterology 111(Sup): S1361.

[Request Form](#)

Department of Pediatrics

Norton L, Tsiperfal A, Cook K, Bagdasarian A, Varady J, **Shah M** and **Wang P** (2016). "Effectiveness and safety of an independently run nurse practitioner outpatient cardioversion program (2009 to 2014)." American Journal of Cardiology 118(12): 1842-1846.

[Full-Text](#)

OUWB Medical Student Author

Department of Family Medicine

Ogunyemi D, **Madan I**, Hage N, Crossley H and Qu L (2016). "Neonatal hypoxia in term infants: Obstetrical predictors and perinatal consequences." Obstetrics and Gynecology 127(Sup 5): 72S.

[Full-Text](#)

Department of Obstetrics and Gynecology

INTRODUCTION: To determine the demographic, obstetrical, intrapartum and perinatal factors associated with neonatal hypoxia. METHODS: Of singleton pregnancies delivered at term in 2013; 46 (0.6%) cases identified as neonatal hypoxia were compared to 8273 neonates (controls). Analysis utilized Chi-square,

student T test and regression analysis. RESULTS: Prenatal factors associated with increased risk of neonatal hypoxia included higher BMI, unmarried mothers, smoking, severe preeclampsia, GBS+ and birth defects. Intrapartum factors that increased the risk of neonatal hypoxia included late decelerations, fetal tachycardia, maternal fever, chorioamnionitis, abnormal fetal heart rate (FHR), primary cesarean section (C/S), and the use of magnesium sulfate, nifedipine, gentamycin or clindamycin in labor. Mothers of hypoxic neonates had more blood loss and longer hospital stay. Neonates with hypoxia had lower Apgar scores, umbilical cord gases trending towards acidosis, and more NICU admission. Associated morbidity with neonatal hypoxia included pulmonary disease (91%), hypoxic ischemic encephalopathy (76%), jaundice (70%), birth defects (65%), nutrition disorders (40%), electrolyte derangements/dehydration (26%), neurological dysfunction (20%), sepsis (20%), and hematological disorders (20%). Regression analysis showed that independent predictors of neonatal hypoxia were maternal fever (P=.001, odds ratio [OR]=6.151); severe preeclampsia (P=.003, OR=6.921); birth defects (P=.000, OR=5.962); smoking (P=.011, OR=3.595); primary C/S (P=.045, OR 2.0); abnormal FHR coding (P=.001 OR=3.12). CONCLUSION: Severe preeclampsia and intrapartum infection are major predictors of neonatal hypoxia and should be targets of preventive efforts. Additionally, measures to reduce maternal smoking, the safe reduction of primary C/S, effective prenatal diagnosis, and appropriate management of intrapartum fetal stress conditions may facilitate the prevention of neonatal hypoxia.

Ogunyemi D, McGlynn S, Leahy J, Knudsen P, Redman M and Bahado-Singh R (2016). "Utilizing quality improvement processes to reverse the rising trends of cesarean-section births." *Obstetrics and Gynecology* 127(Sup 5): 89S.

[Full-Text](#)

Department of Obstetrics and Gynecology

INTRODUCTION: To report on quality processes aimed at decreasing primary C/S rates and Perinatal Core Measure 2 (PCO2): C/S in term singleton vertex nulliparous pregnancies. METHODS: From May 2014, processes included: 1) review of local risk factors; 2) Provider education; 3) Kaizen to implement minimum duration of labor calculations; 4) C/S Committee reviews utilizing ACOG/SMFM guidelines with feedback to obstetricians; 5) Daily benchmarked C/S rates for awareness; 6) providers' surveys on attitudes & potential opportunities; 7) serial C/S rates score cards distribution; 8) monitoring safety committees; 9) C/S checklist; 10) Patient education including safe labor brochures; 11) nursing focus on natural labor, bedside care, and positional changes; 12) residents as a focus of change. Primary outcomes were primary C/S and PCO2 rates; secondary outcomes included operative vaginal deliveries, postpartum hemorrhage (PPH), chorioamnionitis, perineal trauma and perinatal mortality rates. United Health Consortium upper quartile average was the benchmark. RESULTS: U-chart analysis of individual physician primary C-S rates was within control limits demonstrating that the C/S rate was due to culture and not "outliers." From April 2014 to July 2015, primary C/S decreased significantly from 22.5% to 13.9%, and PCO2 from 38.98% to 17.29% There were no significant trends in forceps deliveries: 2.4% to 1.4%; vacuum deliveries: 3.7% to 1.1%; chorioamnionitis 0.7% to 0.2%, PPH: 3.4% to 2.4%, non-instrumental perineal trauma: 1.7% to 1.75%, or instrumental perineal trauma: 20% to 35.7%. CONCLUSION: Quality processes can result in safe reduction of the primary C/S rate by a focus on "natural labor" with patience without increasing co-morbidity.

Ogunyemi D, Whitten A, Sugiyama N, Betcher K, Crossley H and Qu L (2016). "Obstetrical and perinatal correlates of neonatal hypoglycemia in term infants." *Obstetrics and Gynecology* 127(Sup 5): 94S.

[Full-Text](#)

Department of Obstetrics and Gynecology

INTRODUCTION: To determine the demographic, obstetrical, intrapartum and perinatal factors associated with neonatal hypoglycemia. METHODS: Of singleton pregnancies delivered at term in 2013; 318 (3.8%) neonates diagnosed with hypoglycemia were compared to 7955 (96.2%) neonate controls. Analysis utilized Chi-square, student T test and regression analysis. RESULTS: Prenatal factors associated with neonatal hypoglycemia included BMI <35, lower gestational age, and hypertensive disorders, while gestational diabetes was associated with a lower risk. Intrapartum factors increasing risk of neonatal hypoglycemia included labor induction, minimal FHR variability, gentamycin or clindamycin use in labor, lower Bishop scores, and cesarean section. Mothers of neonates with hypoglycemia had more blood loss and longer

hospital stays. Neonates with hypoglycemia were more likely to be SGA, had umbilical cord gases that trended towards acidosis, more birth defects with more admission to NICU. Other neonatal morbidities associated with hypoglycemia included: nutritional disorders (15.4%), birth defects (13.5%), pulmonary disease (10.6%), hematologic conditions (5.7%), hypoxic encephalopathy (4.7%) and electrolyte abnormalities/dehydration (3.5%). Regression analysis showed that independent predictors of neonatal hypoglycemia were SGA (P=0.000, odds ratio [OR]=10.05), minimal FHR variability (P=.015, OR=1.53), birth defects (P=.017, OR=2.56), and cesarean section (P=.016, OR=1.58) while gestational diabetes was independently protective (P=.012, OR=0.077). CONCLUSION: Contrary to expectations, diabetes was protective of neonatal hypoglycemia, which can be explained by the optimum obstetrical management of diabetes. Given that neonatal hypoglycemia is associated with significant morbidity; measures to prevent SGA, the major predictive risk factor and the other predictors of birth defects, intrapartum fetal stress, and cesarean sections may be useful.

Olsen J, **Savin M, Campbell J**, Savin J and **Wong CO** (2016). "885 yttrium-90 radioembolization deliveries: Incidence and role of multiple deliveries during single procedures." Journal of Vascular and Interventional Radiology 27(6): e99.
[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Objective: To evaluate the incidence, indications, and potential benefits of multiple Y90 deliveries during single radioembolization procedures. Methods: A retrospective review was conducted of 885 consecutive radioembolization deliveries during 820 procedures in 503 patients (mean age, 65 y; 293 male) performed between June 2001 and July 2013 at a single academic tertiary care hospital. The indication and benefit of each multiple delivery was determined. Results: Of 820 Y90 microsphere procedures, 757 (92.3%) were single deliveries, 61 (7.4%) were double deliveries, and two (0.2%) were triple deliveries. Multiple deliveries were used to avoid additional Y90 procedures and treatment delays in a variety of arterial variants and tumor locations. Arterial variants included middle hepatic arteries, accessory hepatic arteries, and unoccludable extrahepatic arteries arising from intrahepatic artery branches. Multiple deliveries were also used for large resin microsphere activities. (JVIR. 2015; 26:1769 - 1776) Conclusions: Multiple deliveries were helpful to reduce the number of procedures required to complete treatment, to avoid treatment delays, to reduce the risk of GI tract embolization, and to allow for reliable delivery of high resin microsphere activities.

Orosey M, Gjeorgjievski M, Mogrovejo E, **Cappell M** and **Amin M** (2016). "Gallbladder carcinoma presenting with manubrium metastasis: A rare phenomenon." American Journal of Gastroenterology 111(Sup 1): S565-S566.

[Request Form](#)

Department of Internal Medicine

Department of Pathology

Orosey M, Hakim S, **Cappell M** and **Amin M** (2016). "Colonic perforation from colonic mucormycosis in an immunocompetent patient." American Journal of Gastroenterology 111(Sup 1): S593.

[Request Form](#)

Department of Internal Medicine

Department of Pathology

Orosey M, Mogrovejo E, Hakim S and **Ghaith G** (2016). "A case of ectopic sebaceous glands in the esophagus." American Journal of Gastroenterology 111(Sup 1): S1336.

[Request Form](#)

Department of Internal Medicine

Osetek A, Khayyata S, **Ebersole J** and **Ciacchi J** (2016). "Endovascular colorectal adenocarcinoma metastasis." Journal of Vascular and Interventional Radiology 27(12): 1845.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Otoupalova E, Meka S, Schuiteman E, **Dalal B** and Mina N (2016). "A case of unilateral wheezing: A surprise in the right lower lobe." *Chest* 150(4): 802A.

[Full-Text](#)

Department of Internal Medicine

INTRODUCTION: Cough and wheezing are the most common presenting symptoms of asthma and bronchitis in the outpatient setting and are often treated empirically. However, when atypical features of wheezing are present, such as localization over one lung field, bronchial obstruction must be considered in the differential. We present a rare benign cause of unilateral wheezing and hemoptysis. **CASE PRESENTATION:** A 66 year-old male with a long history of tobacco abuse presented with a 5-month history of cough and wheezing followed by development of minimal hemoptysis. In the past, he was treated with several courses of antibiotics for presumed bronchitis with no improvement. Lung examination revealed localized expiratory wheezes over the right lower lung (RLL) zone. Chest x-ray was unremarkable. Chest CT scan showed a 1.3 cm endobronchial soft tissue lesion in the RLL bronchus with distal post-obstructive changes and atelectasis (Fig. 1). Bronchoscopy was performed and revealed a fleshy, lobulated endobronchial mass causing near-complete occlusion of the RLL bronchus (Fig. 2). Biopsy demonstrated papillary proliferation composed of fibrovascular cores with acute and chronic inflammation, lined by both glandular and metaplastic squamous epithelium without atypia, dysplasia, or definitive stromal invasion. PET scan only showed a max SUV of 1.6 over the RLL lesion. Repeat bronchoscopy, mechanical debridement, and excision of the mass using argon plasma coagulation were performed, restoring patency of the RLL bronchus. Pathology of the mass again confirmed solitary endobronchial papilloma (SEP), and the patient's symptoms resolved after excision. **DISCUSSION:** SEP is a rare benign neoplasm of the lung. Presentation of SEP is highly variable, ranging from asymptomatic to severe cough, hemoptysis, wheezing and dyspnea. Pneumonia and lobar collapse can occur due to bronchial obstruction. Multiple histological subtypes of SEP exist. Solitary squamous papillomas, as in this case, are seen predominantly in middle-age men and are related to tobacco abuse. Bronchoscopy typically shows a polypoid, red glistening lesion. Surgical resection was previously the gold standard for treatment; however, since SEPs are often benign, endobronchial therapy with YAG laser or electrocautery can be successfully used. **CONCLUSIONS:** Wheezing is often treated empirically. However, when unilateral wheezing is present, a search for localized obstruction should be pursued. SEP can cause bronchial obstruction and unilateral wheezing. Bronchoscopic resection is curative in most patients.

Ottomeyer M, Graham CD, Legg AD, Cooper ES, Law CD, Molani M, Matevossian K, Marlin J, Williams C, Newman R, **Wasserman JA**, Segars LW and **Taylor TA** (2016). "Prevalence of nasal colonization by methicillin-resistant staphylococcus aureus in persons using a homeless shelter in Kansas City." *Frontier in Public Health* 4(Article 234): 1-7.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Nasal colonization of methicillin-resistant Staphylococcus aureus (MRSA) plays an important role in the epidemiology and pathogenesis of disease. Situations of close-quarter contact in groups are generally regarded as a risk factor for community-acquired MRSA strains due to transmission via fomites and person-to-person contact. With these criteria for risk, homeless individuals using shelter facilities, including showers and toilets, should be considered high risk for colonization and infection. The aim of this study was to determine the prevalence of nasal colonization of MRSA in a homeless population compared to established rates of colonization within the public and a control group of subjects from a neighboring medical school campus, and to analyze phylogenetic diversity among the MRSA strains. Nasal samples were taken from the study population of 332 adult participants and analyzed. In addition, participants were surveyed about various lifestyle factors in order to elucidate potential patterns of behavior associated with MRSA colonization. Homeless and control groups both had higher prevalence of MRSA (9.8 and 10.6%, respectively), when compared to the general population reported by previous studies (1.8%). However, the control group had a similar MRSA rate compared to health-care workers (4.6%), while the homeless population had an increased prevalence. Risk factors identified in this study included male gender, age over 50 years, and use of antibiotics within the past 3 months. Phylogenetic relationships between nine of the positive samples from the homeless population were analyzed, showing eight of the nine samples had a high

degree of relatedness between the spaA genes of the MRSA strains. This indicates that the same MRSA strain might be transmitted from person-to-person among homeless population. These findings increase our understanding of key differences in MRSA characteristics within homeless populations, as well as risks for MRSA associated with being homeless, such as age and gender, which may then be a useful tool in guiding more effective prevention, treatment, and health care for homeless individuals.

Palmer CW, Jones CI and **Park DK** (2016). "Postoperative infections of the spine." Seminars in Spine Surgery 28(3): 134-142.

[Full-Text](#)

Department of Orthopedic Surgery

Patel KP, **Kazanji B**, Copelan A and **Ciacchi J** (2016). "Predictors of active extravasation during mesenteric angiography in patients with acute gastrointestinal hemorrhage." Emergency Radiology 23(6): 532.

[Full-Text](#)

OUWB Medical Student Author

Purpose: While mesenteric angiography with transcatheter embolization plays a crucial role in the diagnosis and treatment of active lower gastrointestinal (GI) hemorrhage, it is an invasive procedure with inherent risks and is best implemented in those patients with high probability of active hemorrhage at the time of the study. We sought to identify clinical and imaging factors associated with an increased likelihood of visualizing active extravasation at the time of angiography. Materials and Methods: The medical records of 134 patients were retrospectively reviewed and predictor variables including age, sex, pulse, blood pressure, hemoglobin, presence of coagulopathy, antiplatelet or anticoagulation medications, units of packed red blood cells (PRBCs) transfused in the 12 and 24 h prior to angiography, tagged RBC scan results, and time interval from positive tagged RBC scan to angiography were examined in terms of their relationship with the outcome variable of angiogram result. Results: 30 of the 134 patients (22.4 %) had active extravasation at angiography. We found no evidence of a statistically significant association between the time from a positive tagged RBC scan to angiography, nor the positive tagged RBC scan result itself, and the presence of extravasation at angiography. Patients with active extravasation, however, had a lower diastolic blood pressure (BP) at the time of angiography (59.2 vs. 65.5 mmHg, $p=0.0373$), lower hemoglobin at the time of angiography (8.2 vs. 9.1 g/dL, $p=0.0089$), and a greater quantity of units of PRBCs transfused within 12 h of angiography (1.20 units vs 0.64 units, $p=0.0455$). Conclusion: Given its invasiveness, angiography with potential transcatheter embolization is best utilized in those patients with active and/or clinically significant GI hemorrhage. Our results suggest that the clinical status of the patient, as opposed to the results of or time interval from tagged RBC scan to angiography, may better dictate which patients with GI hemorrhage should be taken urgently to the angiography suite.

Pham R, Parke J and **Kernen KM** (2016). "How I do it: Same day discharge for transurethral resection of prostate using Olympus PlasmaButton and PlasmaLoop." Canadian Journal of Urology 23(5): 8491-8494.

[Request Form](#)

OUWB Medical Student Author

Department of Urology

Pololi LH, Evans AT, Civian JT, Gibbs BK, **Gillum LH** and Brennan RT (2016). "A novel measure of "good" mentoring: Testing its reliability and validity in four academic health centers." Journal of Continuing Education in the Health Professions 36(4): 263-268.

[Full-Text](#)

Administration

Porat S, Goukasian N, **Hwang KS**, Zanto T, Do T, Pierce J, Joshi S, Woo E and Apostolova LG (2016). "Dance experience and associations with cortical gray matter thickness in the aging population." Dementia and Geriatric Cognitive Disorders Extra 6(3): 508-517.

[Full-Text](#)

OUWB Medical Student Author

Qin A, Liang J, Zhu J, Ding X, Castillo E, **Guerrero T** and **Yan D** (2016). "SU-F-J-60: Impact of DIR method on treatment dose wrapping." Medical Physics 43(6): 3419-3420.

[Full-Text](#)

Department of Radiation Oncology

Purpose:: To investigate clinical relevant discrepancy between doses wrapped by pure image and biomechanical model based deformable registration (DIR). Methods:: 12 patients, each with a CT pair, were included (5 H&N, 5 Prostate and 2 Lung). A research DIR tool (ADMRIE) was utilized for image based DIR (IMG-DIR). To assure organ matching, contour constrain was applied for prostate patients. Tetrahedron meshes were generated for organs (parotid, bladder, rectum and lung). Deformable vector fields (DVF) from IMG-DIR were interpolated to the surface node of meshes as boundary condition. Biomechanical models using finite element modeling (FEM) were generated by assigning organ specific material properties. The models were then input into a FEM tool (ABAQUS) to calculate internal deformation (FEM-DIR). The output volume node displacements were then interpolated to image grids to get refined DVF. The IMRT treatment doses were wrapped by both DVFs to pre-treatment CTs. DVF vector distance (DVF-VD) was calculated on each organ. Dose parameters were calculated for wrapped doses and normalized to pretreatment plan. Gamma passing rate (GPR) was calculated with IMG-DIR dose as reference. Correlation was evaluated between parotid shrinkage and DVF-VD /dose-discrepancy. Results:: H&N:parotid volume with DVF-VD (>1.5mm) was $6.5 \pm 4.7\%$. The normalized mean dose difference (NMDD) of IMG-DIR and FEM-DIR was $-0.8 \pm 1.5\%$, with range (-4.7% to 1.5%). 2mm/2% GPR was $99.0 \pm 1.4\%$. Moderate correlation was found between parotid shrinkage and DVF-VD ($R=0.61$)/NMDD ($R=0.68$). Prostate:bladder had a NMDD of $-9.9 \pm 9.7\%$, with FEM-DIR wrapped dose systematically higher. Only minor deviation was observed for rectum NMDD ($0.5 \pm 1.1\%$). 3mm/3% GPR of bladder and rectum were $81.9 \pm 12.0\%$ and $93.1 \pm 4.3\%$, respectively. One of lung patients had 3.9%NMDD and 3mm/3%GPR of 95.2% inside lung. Conclusion:: Impact of DIR methods on treatment dose wrapping is patient and organ specific. Generally, bigger organ with larger volume variation leads to greater dose wrapping uncertainty. Acknowledgement: Elekta research grant support. This work was supported by research funding from Elekta

Ratnamala U, Jhala D, Jain NK, Saiyed NM, Raveendrababu M, Rao MV, Mehta TY, Al-Ali FM, Raval K, Nair S, Chandramohan NK, Kuracha MR, Nath SK and **Radhakrishna U** (2016). "Expanding the spectrum of γ -secretase gene mutation-associated phenotypes: Two novel mutations segregating with familial hidradenitis suppurativa (acne inversa) and acne conglobata." Experimental Dermatology 25(4): 314-316.

[Full-Text](#)

Department of Obstetrics and Gynecology

Reynolds JC, Grunau BE, Rittenberger JC, **Sawyer KN**, Kurz MC and Callaway CW (2016). "Association between duration of resuscitation and favorable outcome after out-of-hospital cardiac arrest: Implications for prolonging or terminating resuscitation." Circulation 134(25): 2084-2094.

[Full-Text](#)

Department of Emergency Medicine

Rezaee ME, Nichols EL, Sidhu M and Brown JR (2016). "Combined post- and precapillary pulmonary hypertension in patients with heart failure." Clinical Cardiology 39(11): 658-664.

[Request Form](#)

OUWB Medical Student Author

Rohde R, Wolf J and Adams J (2016). "Where are the women in orthopaedic surgery?" Clinical Orthopaedics and Related Research 474(9): 1950-1956.

[Full-Text](#)

Department of Orthopedic Surgery

Background: Although women account for approximately half of the medical students in the United States, they represent only 13% of orthopaedic surgery residents and 4% of members of the American Academy of Orthopaedic Surgeons (AAOS). Furthermore, a smaller relative percentage of women pursue careers in orthopaedic surgery than in any other subspecialty. Formal investigations regarding the gender discrepancy in choice of orthopaedic surgery are lacking. Questions/purposes: (1) What reasons do women orthopaedic surgeons cite for why they chose this specialty? (2) What perceptions do women orthopaedic surgeons think might deter other women from pursuing this field? (3) What role does early exposure to orthopaedics and mentorship play in this choice? (4) What professional and personal choices do women in orthopaedics make, and how might this inform students who are choosing a career path? Methods: A 21-question survey was emailed to all active, candidate, and resident members of the Ruth Jackson Orthopaedic Society (RJOS, n = 556). RJOS is the oldest surgical women's organization incorporated in the United States. An independent orthopaedic specialty society, RJOS supports leadership training, mentorship, grant opportunities, and advocacy for its members and promotes sex-related musculoskeletal research. Although not all women in orthopaedic practice or training belong to RJOS, it is estimated that 42% of women AAOS fellows are RJOS members. Questions were formulated to determine demographics, practice patterns, and lifestyle choices of women who chose orthopaedic surgery as a specialty. Specifically, we evaluated the respondents' decisions about their careers and their opinions of why more women do not choose this field. For the purpose of this analysis, the influences and dissuaders were divided into three major categories: personal attributes, experience/exposure, and work/life considerations. Results: The most common reasons cited for having chosen orthopaedic surgery were enjoyment of manual tasks (165 of 232 [71%]), professional satisfaction (125 of 232 [54%]), and intellectual stimulation (123 of 232 [53%]). The most common reasons indicated for why women might not choose orthopaedics included perceived inability to have a good work/life balance (182 of 232 [78%]), perception that too much physical strength is required (171 of 232 [74%]), and lack of strong mentorship in medical school or earlier (161 of 232 [69%]). Respondents frequently (29 of 45 [64%]) commented that their role models, mentors, and early exposure to musculoskeletal medicine were influential, but far fewer (62 of 231 [27%]) acknowledged these in their top five influences than they did the more "internal" motivators. Conclusions: To our knowledge, this is the largest study of women orthopaedic surgeons regarding factors influencing their professional and personal choices. Our data suggest that the relatively few women currently practicing orthopaedics were attracted to the field because of their individual personal affinity for its nature despite the lack of role models and exposure. The latter factors may impact the continued paucity of women pursuing this field. Programs designed to improve mentorship and increase early exposure to orthopaedics and orthopaedic surgeons may increase personal interest in the field and will be important to attract a diverse group of trainees to our specialty in the future.

Rohde RS (2016). "Treatment of metaphyseal distal radius fractures with a volar locking plate," In Lawton J (ed). Distal Radius Fractures: A Clinical Casebook. Switzerland: Springer. pp: 1-10.

[Request Form](#)

Department of Orthopedic Surgery

Ross R, Blair SN, Arena R, Church TS, Després JP, **Franklin BA**, Haskell WL, Kaminsky LA, Levine BD, Lavie CJ, Myers J, Niebauer J, Sallis R, Sawada SS, Sui X and Wisløff U (2016). "Importance of assessing cardiorespiratory fitness in clinical practice: A case for fitness as a clinical vital sign: A scientific statement from the American Heart Association." Circulation 134(24): e653-e699.

[Full-Text](#)

Department of Internal Medicine

Safian RD (2016). "Appropriate use of vorapaxar in patients with peripheral artery disease." JACC-Cardiovascular Interventions 9(20): 2165-2166.

[Full-Text](#)

Department of Internal Medicine

Safian RD (2016). "Carotid artery stenting: Avoiding the perfect storm." Catheterization and Cardiovascular Interventions 88(5): 830-831.

[Full-Text](#)

Department of Internal Medicine

Safian RD (2016). "Provisional rotablator for calcified lesions: The Russian roulette of PCI." Catheterization and Cardiovascular Interventions 88(6): 889-890.

[Full-Text](#)

Department of Internal Medicine

Safian RD (2016). "The third rail of interventional cardiology: Revascularization of non-infarct-related arteries during primary PCI." Catheterization and Cardiovascular Interventions 88(4): 506-507.

[Full-Text](#)

Department of Internal Medicine

Sahebjam S, Johnstone PA, Forsyth P, Arrington J, Jaglal M, Tran ND, Vronis FD, Etame AB, Wicklund M, Elie AL, Gatewood T, Macaulay R, **Chinnaiyan P** and Yu M (2016). "A phase I trial of hypofractionated stereotactic irradiation (HFSRT) with pembrolizumab and bevacizumab in patients with recurrent high grade gliomas." Neuro-Oncology 18(Sup 6): vi21.

[Full-Text](#)

Department of Radiation Oncology

BACKGROUND: High grade gliomas carry a grim prognosis despite current therapies. Expression of PD-1 and PD-L1 is found in the microenvironment of most high grade gliomas. There is strong pre-clinical evidence for the combination of anti PD-1/PD-L1 blockade with radiotherapy and anti-angiogenic agents. This study evaluates the combination of pembrolizumab, an anti-PD-1 monoclonal antibody, with hypofractionated stereotactic irradiation (HFSRT) and bevacizumab. **METHODS:** This phase I study (3+3 design) explores the safety, tolerability, recommended phase II dose (RP2D), and antitumor activity of pembrolizumab administered concurrently with HFSRT and bevacizumab (NCT02313272). Adult patients with recurrent glioblastoma (GBM) or anaplastic astrocytoma (maximum diameter of target lesion \leq 3.5 cm) are eligible. Eligible patients receive HFSRT to the recurrent tumor (30 Gy delivered in 5 fractions) combined with bevacizumab (10 mg/kg, intravenously Q2W) and pembrolizumab (100 mg or 200 mg intravenously based on dose level, Q3W). Two dose levels of pembrolizumab (100 mg and 200 mg Q3W) are explored. After determination of RP2D, an additional 20 patients will be enrolled in an expansion cohort. Response is assessed every 6W per RANO criteria. Effect of treatment on quality of life measures are evaluated. **RESULTS:** As of June 2016, dose escalation cohort has been completed and accrual to dose expansion cohort is ongoing. Combination of HFSRT (30 Gy in 5 fractions) with pembrolizumab (200 mg every 3 weeks) and bevacizumab (10 mg/kg every 2 weeks) is well tolerated. No dose limiting toxicity or treatment-related neurologic adverse event has been observed. Six out of nine patients have achieved objective response (complete response + partial response). **CONCLUSION:** Preliminary data demonstrate an acceptable toxicity profile and encouraging anti-tumor activity. Updated safety and efficacy data will be presented.

Schuiteman E, Otoupalova E, Meka S, Verrill T, Mina N and **Dalal B** (2016). "Constriction-created catastrophe." Chest 150(4): 1251A.

[Full-Text](#)

Department of Internal Medicine

INTRODUCTION: A patent foramen ovale (PFO) is found in 25-30% of patients. The discovery is often made only on autopsy, as most PFOs are clinically silent and any inter-atrial blood exchange usually shunts from the left to right heart. 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. CASE PRESENTATION: A 75-year-old male presented with progressive dyspnea for one month. Upon presentation, he was found to have hypoxia with oxygen saturation of 80%. His lung and cardiac exams were normal. Arterial blood gas showed pure hypoxia without hypercarbia. CXR was normal. CT scan with IV contrast was negative for pulmonary embolism and other lung pathology; however, it showed a small amount of pericardial fluid and calcifications. Transthoracic echocardiography with agitated saline was obtained and showed moderate shunting through a PFO. Right heart catheterization (RHC) was performed and showed equalization of diastolic pressures consistent with constrictive physiology (Fig. 1). Autoimmune markers and tuberculosis testing were negative. Cardiac MRI showed thickened pericardium with a small circumferential effusion and ventricular interdependence, confirming pericardial constriction. He underwent pericardiectomy for which he was electively intubated. Despite pericardiectomy, the patient remained hypoxic on the ventilator requiring FiO₂ of 100%. This indicated that his hypoxia was primarily due to the PFO. Transesophageal echo was done showing a moderate PFO with significant right-left shunting (Fig 2). The patient underwent another RHC with successful transcatheter closure. He was quickly weaned from the ventilator and was successfully extubated three days post-procedure, and was discharged home several days later on room air. DISCUSSION: PFOs are typically asymptomatic. Rarely, they can cause catastrophic clinical manifestations including refractory hypoxemia. In this case, other causes of hypoxia were first ruled out, including V/Q mismatch, hypoventilation, and diffusion limitation. The patient was found to have significant constrictive physiology, which caused right to left shunting and refractory hypoxia which improved only after closure of PFO. CONCLUSIONS: This case illustrates that PFOs are not always clinically silent, and should be a serious clinical consideration in cases of hypoxic respiratory failure when the source is unclear.

Sefa N, Pandurangadu AV, Mann A and **Bahl A** (2016). "Nontraumatic splenic rupture." Emergency Medicine 48(10): 456-459.

[Request Form](#)

Department of Emergency Medicine

Sefa N and **Sawyer KN** (2016). "Smith-modified sgarbossa criteria and paced rhythms: A case report." Journal of Emergency Medicine 51(5): 584-588.

[Full-Text](#)

Department of Emergency Medicine

Shah A, Cheung A, Thomas BJ, Yonekawa Y, **Garretson B, Capone A** and **Hassan TS** (2016). "Massive choroidal neovascular membranes: A severe bilateral phenotype of refractory neovascular age-related macular degeneration." Investigative Ophthalmology and Visual Science 57(12): 3.

[Request Form](#)

Department of Ophthalmology

Silva C, **Franklin BA** and de Araujo CGS (2016). "Influence of central obesity in estimating maximal oxygen uptake." Clinics 71(11): 629-634.

[Full-Text](#)

Department of Internal Medicine

OBJECTIVE: To assess the influence of central obesity on the magnitude of the error of estimate of maximal oxygen uptake in maximal cycling exercise testing. METHOD: A total of 1,715 adults (68% men) between 18-91 years of age underwent cardiopulmonary exercise testing using a progressive protocol to volitional fatigue. Subjects were stratified by central obesity into three quartile ranges: Q1, Q2-3 and Q4. Maximal oxygen uptake [mL.(kg. min)⁻¹] was estimated by the attained maximal workload and body weight using gender- and population-specific equations. The error of estimate [mL.(kg. min)⁻¹] and percent error between measured and estimated maximal oxygen uptake values were compared among obesity quartile ranges. RESULTS: The error of estimate and percent error differed (mean +/- SD) for men (Q1= 1.3 +/- 3.7 and 2.0 +/- 10.4; Q2-3= 0.5 +/- 3.1 and -0.5 +/- 13.0; and Q4=-0.3 +/- 2.8 and -4.5 +/- 15.8 (po0.05)) and for women (Q1= 1.6 +/- 3.3 and 3.6 +/- 10.2; Q2-3= 0.4 +/- 2.7 and -0.4 +/- 11.8; and Q4=-0.9 +/- 2.3 and -10.0

+/- 22.7 (p < 0.05)). CONCLUSION: Central obesity directly influences the magnitude of the error of estimate of maximal oxygen uptake and should be considered when direct expired gas analysis is unavailable.

Singh D, **Yang S** and **Cappell MS** (2016). "Biliary ascariasis diagnosed and extracted by ERCP in the United States." ACG Case Reports Journal 3(4): 2.

[Full-Text](#)

Department of Internal Medicine

Smith MP and Bluth MH (2016). "Common interferences in drug testing." Clinics in Laboratory Medicine 36(4): 663-671.

[Full-Text](#)

Department of Pathology

Smith MP and Bluth MH (2016). "Forensic toxicology: An introduction." Clinics in Laboratory Medicine 36(4): 753-759.

[Full-Text](#)

Department of Pathology

Sokhandon F, Al-katib S, Bahoura L, Copelan A, George D and Scola D (2016). "Multidetector CT enterography of focal small bowel lesions: A radiological–pathological correlation." Abdominal Radiology: 1-23. ePub Ahead of Print.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Soto R, Jahr JS, Pavlin J, Sabo D, Philip BK, Egan TD, Rowe E, De Bie J and Woo T (2016). "Safety and efficacy of rocuronium with sugammadex reversal versus succinylcholine in outpatient surgery-a multicenter, randomized, safety assessor-blinded trial." American Journal of Therapeutics 23(6): e1654-e1662.

[Full-Text](#)

Department of Anesthesiology

Sousaris N and **Doshi SK** (2016). "Effective and efficient evaluation of extra-articular etiologies of acute hip pain in the emergency setting." Emergency Radiology 23(6): 575-576.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Learning Objectives/Aims: Provide the radiologist with an organized and compartmentalized approach to more effectively and efficiently evaluate for extra-articular pathology in the setting of acute hip pain. Provide the radiologists with a multimodality imaging review of common and uncommon extraarticular etiologies that may present as acute hip pain. To assist the radiologist in selecting the appropriate imaging modality/protocol that may result in a more comprehensive assessment and accurate diagnosis in the presentation of acute hip pain. Background: There has been a consistent annual increase in presentations to the emergency room for acute hip pain. While intra-articular pathology often represents the etiology, too often the diagnosis remains unclear even after multimodality imaging is performed. Therefore, numerous extra-articular etiologies should be considered and evaluated for by the radiologist. Radiologic evaluation of acute hip pain in the emergency setting typically involves radiography and often CT or MRI. During the imaging evaluation of acute hip pain, special attention should be given to evaluation of the extraarticular structures and possible sources for pathology. Content: Our exhibit will provide an organized approach for evaluation of relevant extra-articular anatomy and possible sources for pathology that may present as acute hip pain. This includes a review of musculoskeletal (e.g. bursitis, impingement, hardware complication, tendon/muscle tear), genitourinary (e.g. urinary calculi, diverticuli, infection), and gastrointestinal (e.g. hernia, diverticulitis, colitis) etiologies. This pictorial review will familiarize the radiologist with various extra-articular diagnoses that will result in improved diagnostic accuracy. Lastly, we will provide tips to assist the radiologist in choosing the appropriate imaging modality and protocol that will allow for a rapid yet comprehensive assessment. Summary: There are numerous extra-articular etiologies that may cause the patient to present to the emergency room for acute hip pain. Our education exhibit will review relevant anatomy, pathology,

imaging signs, and modalities/protocols that will aid the radiologist in making a more efficient and effective assessment, thereby improving diagnostic accuracy and subsequently patient outcomes.

Sovoda R, **Donev K** and **Qu ZH** (2016). "A low count load method for accurate quantitative assessments of high power fields." American Journal of Clinical Pathology 146(Sup 1): 1.

[Request Form](#)

Department of Pathology

Sukari A, Nagasaka M, **Al-Hadidi A** and Lum LG (2016). "Cancer immunology and immunotherapy." Anticancer Research 36(11): 5593-5606.

[Request Form](#)

OUWB Medical Student Author

Sulich A (2016). "Acetaminophen in perspective." Journal of the American Geriatrics Society 64(11): 2397-2398.

[Full-Text](#)

Department of Internal Medicine

Swan R, Ostmo S, Sonmez K, **Drenser KA**, **Lee TC**, Berrocal AM, Simmons C, Rotter JI, Chen YDI, Chan RVP and Chiang MF (2016). "Identification of traits of interest in genetic studies of retinopathy of prematurity." Investigative Ophthalmology and Visual Science 57(12): 3.

[Request Form](#)

Department of Ophthalmology

Tantisattamo E, Chokechanachaisakul A, Pitukweerakul S and Ratanasrimetha P (2016). "Acute kidney injury: Not just an acute rejection in kidney transplantation." American Journal of Kidney Diseases 67(5): A106.

[Full-Text](#)

Department of Internal Medicine

Acute rejection is one of the most leading immunological causes of AKI in early posttransplant period; however, other non-immunological causes are not uncommon and need to be in differential diagnoses. A 36-year-old man with ESRD underwent uneventful kidney transplantation. An initial baseline serum creatinine was 1.7 mg/dL. Two months posttransplantation, he developed new onset BK viremia and viuria with a viral load of 6,083 and 385,286 copies/mL, respectively. The target 12-hour tacrolimus trough level was decreased to 4-6 ng/mL resulting undetectable viral load. However, serum creatinine had trended up to 4.61 mg/dL. Renal biopsy showed borderline changes. Pulse methylprednisolone was started. Since serum creatinine continued rising up to 6.12 mg/dL, transplant renal ultrasound was performed and revealed a 4.5 cm fluid collection compressing the transplant ureter causing moderate hydronephrosis. He underwent emergent percutaneous transplant nephrotomy and ureteral stent placement. Serum creatinine trended down to 1.52 mg/dL. Our patient presented with AKI in the early posttransplant period. Initial working diagnosis of borderline change as a cause of AKI was possible; however, rapidly rising of serum creatinine and initial BK viremia and viuria indicating highly suppressed net immune state made immunological cause of AKI unlikely. Other common causes of AKI especially with a history of recent transplant renal biopsy should raise a suspicion for bleeding complication and subsequent perinephric and periureteral hematoma as a potential cause of post-renal AKI. The etiologies of AKI in early posttransplant period are broad and include both immunological and non-immunological causes. Even though, rejection is a common and specific cause of AKI in kidney transplant recipients, basic approach to investigate the common causes of AKI including transplant renal ultrasound should be an initial step before the empirical therapy with high immunosuppression is started.

Tantisattamo E, Chokechanachaisakul A, Pitukweerakul S, Ratanasrimetha P, Shetty A, Traitanon O and Gallon L (2016). "Renal allograft outcomes with renal artery angioplasty and/or stenting in transplant renal artery stenosis." [American Journal of Transplantation](#) 16(Sup 3): 577.

[Request Form](#)

Department of Internal Medicine

Tantisattamo E, Chokechanachaisakul A, Pitukweerakul S, Ratanasrimetha P, Shetty AA, Traitanon O and Gallon L (2016). "Is renal artery angioplasty and/or stenting a potential treatment for resistant hypertension in transplant renal artery stenosis?" [American Journal of Kidney Diseases](#) 67(5): A106.

[Full-Text](#)

Department of Internal Medicine

The efficacy of renal artery angioplasty±stenting for blood pressure (BP) control in transplant renal artery stenosis (TRAS) is unknown. We aim to identify this outcome after this procedure. From all 1,905 kidney transplantations performed between 2008 and 2015 at our institute, 19 patients were diagnosed with TRAS by angiography and each of these 19 patients was individually matched to 2 subjects without TRAS based on age, gender, diabetes, and year of kidney transplantation. Mean age 50.29±3.51 and 36.84% had diabetes. The majority of patients were Caucasian (37%) and African American (32%), and 84% were male. At the time of angioplasty, SBP (157.3±4.6 vs. 138.3±3.7, p=0.003) and DBP (84.1±3.5 vs. 74.4±1.8, p=0.0074) were significantly higher in TRAS group while serum creatinine (SCr) did not differ. The mean duration of diagnosis for TRAS was 3.31±3.41 months posttransplant (range: 0.37 to 63.23). SBP after angioplasty±stenting were significantly lower than pre-angiographic SBP (137.95±6.70 vs. 157.32±4.58 mmHg, p=0.0186). However, DBP were not significantly different (77.42 ± 2.97 vs. 84.11±3.49 mmHg, p=0.0605) and same as SCr (1.68±0.15 and 2.36±0.61 mg/dL, p=0.6800). Mean duration of follow-up from the time when TRAS was diagnosed to the most recent follow-up was 2.09±0.43 years (range: 0.02 to 6.34). There was no improvement in SBP, DBP, and SCr at the time of the most recent follow-up visit compared to those at pre-angioplasty. Only 1 patient (5%) had arterial dissection during the procedure. Even though lowering short-term BP, renal artery angioplasty±stenting may not control BP in the long-term follow-up.

Tantisattamo E, Chokechanachaisakul A, Traitanon O, Shetty A, Ho B, Friedewald J, Bhorade S, Haynes A, Nieland A and Gallon L (2016). "Hyponatremia in early post lung transplantation predicts patient and hospital outcomes." [American Journal of Transplantation](#) 16(Sup 3): 597.

[Request Form](#)

Department of Internal Medicine

Tantisattamo E, Ratanasrimetha P, Pitukweerakul S, Chokechanachaisakul A, Shetty AA, Traitanon O and Gallon L (2016). "Outcomes of transplant renal artery stenosis after renal artery angioplasty and/or stenting." [Nephrology Dialysis Transplantation](#) 31: 1583.

[Request Form](#)

Department of Internal Medicine

Thanos A, **Faia LJ**, Yonekawa Y and Randhawa S (2016). "Optical coherence tomographic angiography in acute macular neuroretinopathy." [JAMA Ophthalmology](#) 134(11): 1310-1314.

[Full-Text](#)

Department of Ophthalmology

Thanos A, Yonekawa Y, Todorich B, **Huang N**, **Drenser KA**, **Williams GA**, **Trese MT** and **Capone A** (2016). "Spectral-domain optical coherence tomography in older patients with history of retinopathy of prematurity." [Ophthalmic Surgery Lasers and Imaging Retina](#) 47(12): 1086-1094.

[Request Form](#)

OUWB Medical Student Author

Department of Ophthalmology

Thanos A, Yonekawa Y, Todorich B, Moshfeghi DM and **Trese MT** (2016). "Screening and treatments using telemedicine in retinopathy of prematurity." Eye and Brain 8: 147-151.

[Request Form](#)

Department of Ophthalmology

Thanos A, Yonekawa Y, Todorich B, Thomas B, **Huang NT, Dresner KA, Trese MT** and **Capone A** (2016). "Vitreoretinal interface abnormalities in older patients with history of retinopathy of prematurity." Investigative Ophthalmology and Visual Science 57(12): 2.

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OUIWB Medical Student Author

Department of Ophthalmology

Todorich B, Thanos A, Yonekawa Y, Thomas BJ, Abbey AM and **Faia LJ** (2016). "Transconjunctival sutureless intrascleral fixation of secondary intraocular lenses in patients with uveitis." Ocular Immunology and Inflammation: 1-5. ePub Ahead of Print.

[Request Form](#)

Department of Ophthalmology

Toushan M, **Zhang PL**, Ysell C, **Macknis J, Amin M**, Kannan HD and **Micale MA** (2016). "The effective use of fluorescence in situ hybridization on touch preparation slides permits a timely diagnosis of synovial sarcoma: Lessons learned." American Journal of Clinical Pathology 146(Sup 1): 2.

[Request Form](#)

Department of Pathology

Trapani A, **Goncalves LF** and Pires MMD (2016). "Perinatal and hemodynamic evaluation of sildenafil citrate for preeclampsia treatment: A randomized controlled trial Reply." Obstetrics and Gynecology 128(5): 1182.

[Full-Text](#)

Department of Obstetrics and Gynecology

Vakharia PP, Huang NT, Jankowski M, Thomas BJ, Chan RVP, **Trese MT, Capone A**, Yonekawa Y and **Dresner KA** (2016). "International publication trends of retinopathy of prematurity literature over 40 years." Investigative Ophthalmology and Visual Science 57(12): 4.

[Request Form](#)

OUIWB Medical Student Author

Department of Medical Education

Department of Ophthalmology

Villafuerte-Gonzalez R, Valadez-Jimenez VM, Sierra-Ramirez JA, **Ysunza PA**, Chavarria-Villafuerte K and Hernandez-Lopez X (2016). "Acoustic analysis and electroglottography in elite vocal performers." Journal of Voice. ePub Ahead of Print.

[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.

Vu CC, Lanni TB and **Robertson JM** (2016). "y Variations in Medicare reimbursement in radiation oncology: An analysis of the Medicare provider utilization and payment data set." International Journal of Radiation Oncology Biology Physics 94(5): 1000-1005.

[Full-Text](#)

Department of Radiation Oncology

Purpose: The purposes of this study were to summarize recently published data on Medicare reimbursement to individual radiation oncologists and to identify the causes of variation in Medicare reimbursement in radiation oncology. Methods and Materials: The Medicare Provider Utilization and Payment Data: Physician and Other Supplier Public Use File (POSPUF), which details nearly all services provided by radiation oncologists in 2012, was used for this study. The data were filtered and analyzed by physician and by billing code. Statistical analysis was performed to identify differences in reimbursements based on sex, rurality, billing of technical services, or location in a certificate of need (CON) state. Results: There were 4135 radiation oncologists who received a total of \$1,499,625,803 in payments from Medicare in 2012. Seventy-five percent of radiation oncologists were male. The median reimbursement was \$146,453. The code with the highest total reimbursement was 77418 (radiation treatment delivery intensity modulated radiation therapy [IMRT]). The most commonly billed evaluation and management (E/M) code for new visits was 99205 (49%). The most commonly billed E/M code for established visits was 99213 (54%). Forty percent of providers billed none of their new office visits using 99205 (the highest E/M billing code), whereas 34% of providers billed all of their new office visits using 99205. For the 1510 radiation oncologists (37%) who billed technical services, median Medicare reimbursement was \$606,008, compared with \$93,921 for all other radiation oncologists ($P < .001$). On multivariate analysis, technical services billing ($P < .001$), male sex ($P < .001$), and rural location ($P = .007$) were predictive of higher Medicare reimbursement. Conclusions: The billing of technical services, with their high capital and labor overhead requirements, limits any comparison in reimbursement between individual radiation oncologists or between radiation oncologists and other specialists. Male sex and rural practice location are independent predictors of higher total Medicare reimbursements. (C) 2016 Elsevier Inc. All rights reserved.

Walia S, Murleedharn C, **Band J**, Kanwar M and Kumar A (2016). "Quantitation of antibiotic resistance genes pollution in hospital waste water effluent and Urban Clinton River Water, Michigan, USA." Current Medicine Research and Practice 6(4): 149-151.

[Request Form](#)

Department of Internal Medicine

Hospitals are the major antibiotic consumers and thus facilitate the spread of antibiotic resistance. Hospital wastewaters definitely play an important role in the evolution and dissemination of antibiotic-resistant genes. In this study, we evaluated the occurrence of three common groups of extended spectrum beta lactamase (ESBL) and their resistance genes in the hospital effluent and urban river as possible sources. A total of 156 bacteria were isolated from upstream and downstream of hospital waste-water treatment plant. Waste water samples were analyzed for the copy number of three groups of ESBL; SHV, TEM and CTX-M-1 genes. The bacteria isolated were approximately 40–65% resistant to cefotaxime, 25–40% to chloramphenicol, 30–40% to tetracycline, 25–65% to ciprofloxacin and finally 30–50% to gentamicin. Of these 156 bacteria, 34 (22%) were found to be ESBL producing bacteria. The copy numbers¹ are 102, 104 and 103, respectively. Based on the data, the abundance of blaSHV and blaCTX-M-1 remained similar in both populations whereas the quantity of blaTEM decreased to an order of 10² in Urban Clinton River Water

(UCRW). Hospital effluent and urban rivers are potential routes for dissemination of ESBL producing bacteria and their respective genes into the natural environment and pose a hazard to environmental and public health.

Wasserman JA (2016). "Otherwise homeless: vehicle living and the culture of homelessness." [Social Forces](#) 95(1): 2.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Wasserman JA, Aghababaei N and Nannini D (2016). "Culture, personality, and attitudes toward euthanasia: A comparative study of university students in Iran and the United States." [Omega-Journal of Death and Dying](#) 72(3): 247-270.

[Full-Text](#)

Department of Biomedical Sciences (OU)

This article reports cultural differences in the relationship between personality characteristics and euthanasia attitudes using samples from Iran and the United States. Survey data from university students were analyzed using multivariate regression. Results indicate that while attitudes toward euthanasia are significantly more positive among the U.S. sample, there is significantly greater variation among the Iranian sample. Honesty-Humility and Openness to Experience are predictive factors in both samples, where Agreeableness is only significant among the Iranian group. Additionally, Chow tests of structural features of the multivariate models show significant differences between the two samples. We conclude by discussing implications of these results for understanding cultural similarities and differences in attitudes toward euthanasia, including the practical implications of this work for patient care in an increasingly globalized world.

Wilkoff BL, Fauchier L, Stiles MK, Morillo CA, Al-Khatib SM, Almendral J, Aguinaga L, Berger RD, Cuesta A, Daubert JP, Dubner S, Ellenbogen KA, Mark Estes NA, Fenelon G, Garcia FC, Gasparini M, **Haines DE**, Healey JS, Hurtwitz JL, Keegan R, Kolb C, Kuck KH, Marinskis G, Martinelli M, McGuire M, Molina LG, Okumura K, Proclemer A, Russo AM, Singh JP, Swerdlow CD, Teo WS, Uribe W, Viskin S, Wang CC, Zhang S and Senerth E (2016). "2015 HRS/EHRA/APHRS/SOLAECE expert consensus statement on optimal implantable cardioverter-defibrillator programming and testing." [Heart Rhythm](#) 13(2): e50-e86.

[Full-Text](#)

Department of Internal Medicine

Wilkoff BL, Fauchier L, Stiles MK, Morillo CA, Al-Khatib SM, Almendral J, Aguinaga L, Berger RD, Cuesta A, Daubert JP, Dubner S, Ellenbogen KA, Mark Estes NA, Fenelon G, Garcia FC, Gasparini M, **Haines DE**, Healey JS, Hurtwitz JL, Keegan R, Kolb C, Kuck KH, Marinskis G, Martinelli M, McGuire M, Molina LG, Okumura K, Proclemer A, Russo AM, Singh JP, Swerdlow CD, Teo WS, Uribe W, Viskin S, Wang CC and Zhang S (2016). "Erratum to '2015 HRS/EHRA/APHRS/SOLAECE expert consensus statement on optimal implantable cardioverter-defibrillator programming and testing' (Journal of Arrhythmia (2016) 32(1) (1–28) (S1880427615001696) (10.1016/j.joa.2015.12.001))." [Journal of Arrhythmia](#) 32(5): 441-442.

[Full-Text](#)

Department of Internal Medicine

Williams K, Mitra A, **Anderson W** and **Bastani A** (2016). "Who is the other person in the room: Patient attitudes towards emergency department medical scribes." [Annals of Emergency Medicine](#) 68: S22.

[Full-Text](#)

OUWB Medical Student Author

Department of Emergency Medicine

Wilson B and **Habra G** (2016). "MR Imaging of the acute painful hip: A comprehensive exam." [Emergency Radiology](#) 23(6): 578-579.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Learning Objectives/Aims: 1. Review common etiologies of hip pain other than fracture that are most readily diagnosed by MRI after inconclusive clinical exam and indeterminate radiographs. 2. Summarize the characteristic imaging findings of the more common acute hip pathologies in instances where hip fracture was initially suspected. 3. Highlight the utility of pelvis and hipMRI as a comprehensive imaging exam in the emergency setting which aids in earlier and accurate diagnoses, guides treatment and improves patient outcomes. Background: In cases of suspected hip fracture in a middle aged or elderly patient where initial radiographs are unrevealing, the next best imaging investigation is an MRI of the pelvis and affected hip according to the American College of Radiology Appropriateness Criteria (Rating of 9 compared to a rating of 6 for CT). The radiologist reviewing a hip MRI for suspected occult fracture must remain vigilant as a host of other pathologies can mimic hip fracture clinically. There are many case examples where MR imaging of the hip adds for a more complete assessment, even in younger adults and cases where radiographs were positive, as it is more sensitive in detecting clinically relevant injuries to tendons, muscles and osteochondral structures. Content: A brief introduction and review of standard MRI protocols of the hip and pelvis in the emergency setting will be included. MR imaging findings of common causes of hip pain that are radiographically occult and/or may mimic hip fracture clinically including muscle tears/sprains, tendon injuries, osteomyelitis, septic hip, post-traumatic hematoma, atypical fractures and some musculoskeletal neoplasms will be illustrated. Summary: The more common etiologies and presentations of acute hip pathology with an emphasis on pathologies which may clinically mimic fracture on initial presentation will be presented. The aim of this presentation will be to illustrate the utility of MRI of the hip and pelvis in the emergency setting as it can more completely demonstrate the entire spectrum of pathologies which may cause acute hip pain. As such, MRI allows for early patient triage, guides appropriate therapy earlier after patient presentation allowing for improved patient outcomes and overall reduces healthcare costs.

Winegardner J, Yost C and Grullon K (2016). "Inadequate double-pseudomonal coverage with ciprofloxacin versus aminoglycosides in the intensive care unit." Pharmacotherapy 36(7): E89.

[Request Form](#)

Department of Biomedical Sciences (BHS)

Wyrzykowski M, **Xie M** and Walley-Goike V (2016). "Retrospective analysis of abnormal partial thromboplastin time results in patients receiving new oral anticoagulants." American Journal of Clinical Pathology 146(Sup 1): S46.

[Request Form](#)

Department of Pathology

Xie M and **Ma H** (2016). "Clinicopathological features of acute myeloid leukemia in a patient with phase III clinical trial of Tofacitinib (Xeljanz) therapy for ulcerative colitis: A case study with literature review." American Journal of Clinical Pathology 146(Sup 1): S75.

[Request Form](#)

Department of Pathology

Yadav S, Reeves A, Campian S, Paine A and **Zakalik D** (2016). "Outcomes of retesting BRCA negative patients using multigene panels." Familial Cancer: 1-10. ePub Ahead of Print.

[Full-Text](#)

Department of Internal Medicine

Yee S, **Chinnaiyan P**, Wloch J, Pirkola M and **Yan D** (2016). "SU-D-207A-02: Possible characterization of the brain tumor vascular environment by a novel strategy of quantitative analysis in dynamic contrast enhanced MR Imaging: A combination of both patlak and logan analyses." Medical Physics 43(6): 3343.

[Full-Text](#)

Department of Radiation Oncology

Purpose:: The majority of quantitative analyses involving dynamic contrast enhanced (DCE) MRI have been performed to obtain kinetic parameters such as Ktrans and ve. Such analyses are generally performed assuming a "reversible" tissue compartment, where the tracer is assumed to be rapidly equilibrated between

the plasma and tissue compartments. However, some tumor vascular environments may be more suited for a "non-reversible" tissue compartment, where, as with FDG PET imaging, the tracer is continuously deposited into the tissue compartment (or the return back to the plasma compartment is very slow in the imaging time scale). Therefore, Patlak and Logan analyses, which represent tools for the "non-reversible" and "reversible" modeling, respectively, were performed to better characterize the brain tumor vascular environment.

Methods:: A voxel-by-voxel analysis was performed to generate both Patlak and Logan plots in two brain tumor patients, one with grade III astrocytoma and the other with grade IV astrocytoma or glioblastoma. The slopes of plots and the r-square were then obtained by linear fitting and compared for each voxel. Results:: The 2-dimensional scatter plots of Logan (Y-axis) vs. Patlak slopes (X-axis) clearly showed increased Logan slopes for glioblastoma (Figure 3A). The scatter plots of goodness-of-fit (Figure 3B) also suggested glioblastoma, relative to grade III astrocytoma, might consist of more voxels that are kinetically Logan-like (i.e. rapidly equilibrated extravascular space and active vascular environment). Therefore, the enhanced Logan-like behavior (and the Logan slope) in glioblastoma may imply an increased fraction of active vascular environment, while the enhanced Patlak-like behavior implies the vascular environment permitting a relatively slower washout of the tracer. Conclusion:: Although further verification is required, the combination of Patlak and Logan analyses in DCE MRI may be useful in characterizing the tumor vascular environment, and thus, may have implications in tumor grading and monitoring response to anti-vascular therapy.

Zhang J, Nguyen D, Woods K, Tran A, Li X, Ding X, Kabolizadeh P, **Guerrero T** and Sheng K (2016). "SU-F-T-186: A treatment planning study of normal tissue sparing with robustness optimized IMPT, 4Pi IMRT, and VMAT for head and neck cases." *Medical Physics* 43(6): 3504.

[Full-Text](#)

Department of Radiation Oncology

Purpose:: We performed a retrospective dosimetric comparison study between the robustness optimized Intensity Modulated Proton Therapy (RO-IMPT), volumetric-modulated arc therapy (VMAT), and the non-coplanar 4 π intensity modulated radiation therapy (IMRT). These methods represent the most advanced radiation treatment methods clinically available. We compare their dosimetric performance for head and neck cancer treatments with special focus on the OAR sparing near the tumor volumes. Methods:: A total of 11 head and neck cases, which include 10 recurrent cases and one bilateral case, were selected for the study. Different dose levels were prescribed to tumor target depending on disease and location. Three treatment plans were created on commercial TPS systems for a novel noncoplanar 4 π method (20 beams), VMAT, and RO-IMPT technique (maximum 4 fields). The maximum patient positioning error was set to 3 mm and the maximum proton range uncertainty was set to 3% for the robustness optimization. Line dose profiles were investigated for OARs close to tumor volumes. Results:: All three techniques achieved 98% coverage of the CTV target and most photon plans had less than 110% of the hot spots. The RO-IMPT plans show superior tumor dose homogeneity than 4 π and VMAT plans. Although RO-IMPT has greater R50 dose spillage to the surrounding normal tissue than 4 π and VMAT, the RO-IMPT plans demonstrate better or comparable OAR (parotid, mandible, carotid, oral cavity, pharynx, and etc.) sparing for structures closely abutting tumor targets. Conclusion:: The RO-IMPT's ability of OAR sparing is benchmarked against the C-arm linac based non-coplanar 4 π technique and the standard VMAT method. RO-IMPT consistently shows better or comparable OAR sparing even for tissue structures closely abutting treatment target volume. RO-IMPT further reduces treatment uncertainty associated with proton therapy and delivers robust treatment plans to both unilateral and bilateral head and neck cancer patients with desirable treatment time.

Zhu J, Liang J, Chen S, **Qin A** and **Yan D** (2016). "SU-F-J-86: Method to include tissue dose response effect in deformable image registration." *Medical Physics* 43(6): 3426.

[Full-Text](#)

Department of Radiation Oncology

Purpose:: Organ changes shape and size during radiation treatment due to both mechanical stress and radiation dose response. However, the dose response induced deformation has not been considered in conventional deformable image registration (DIR). A novel DIR approach is proposed to include both tissue elasticity and radiation dose induced organ deformation. Methods:: Assuming that organ sub-volume

shrinkage was proportional to the radiation dose induced cell killing/absorption, the dose induced organ volume change was simulated applying virtual temperature on each sub-volume. Hence, both stress and heterogeneity temperature induced organ deformation. Thermal stress finite element method with organ surface boundary condition was used to solve deformation. Initial boundary correspondence on organ surface was created from conventional DIR. Boundary condition was updated by an iterative optimization scheme to minimize elastic deformation energy. The registration was validated on a numerical phantom. Treatment dose was constructed applying both the conventional DIR and the proposed method using daily CBCT image obtained from HN treatment. Results:: Phantom study showed 2.7% maximal discrepancy with respect to the actual displacement. Compared with conventional DIR, subvolume displacement difference in a right parotid had the mean±SD (Min, Max) to be 1.1±0.9(-0.4~4.8), -0.1±0.9(-2.9~2.4) and -0.1±0.9(-3.4~1.9)mm in RL/PA/SI directions respectively. Mean parotid dose and V30 constructed including the dose response induced shrinkage were 6.3% and 12.0% higher than those from the conventional DIR. Conclusion:: Heterogeneous dose distribution in normal organ causes non-uniform sub-volume shrinkage. Sub-volume in high dose region has a larger shrinkage than the one in low dose region, therefore causing more sub-volumes to move into the high dose area during the treatment course. This leads to an unfavorable dose-volume relationship for the normal organ. Without including this effect in DIR, treatment dose in normal organ could be underestimated affecting treatment evaluation and planning modification. Acknowledgement: Partially Supported by Elekta Research Grant

Zwaans BM, **Chancellor MB** and **Lamb LE** (2016). "Modeling and treatment of radiation cystitis." Urology 88(Feb): 14-21.

[Full-Text](#)

Department of Urology

Radiation cystitis (RC) is a debilitating condition that, if not managed at an early stage, can have a major impact on the quality of life of a patient and can lead to severe hemorrhaging and even death. Current treatments are focused on arresting bladder hemorrhaging, but none are able to relieve other urological symptoms associated with cystitis. There is a strong need for in-depth studies using preclinical RC models to better understand the underlying disease progression and to test novel therapies. Here we review the most commonly used therapies for RC, novel treatment strategies, and the preclinical models used to date.

Zwaans BM, **Krueger S**, Bartolone SN, **Chancellor MB**, **Marples B** and **Lamb LE** (2016). "Modeling of chronic radiation-induced cystitis in mice." Advances in Radiation Oncology 1(4): 333-343.

[Full-Text](#)

Department of Radiation Oncology

Department of Urology

PURPOSE: Radiation cystitis (RC), a severe inflammatory bladder condition, develops as a side-effect of pelvic radiation therapy in cancer patients. There are currently no effective therapies to treat RC, in part due to the lack of preclinical model systems. In this study, we developed a mouse model for RC and used a small animal radiation research platform (SARRP) to simulate the targeted delivery of radiation as used with human patients. METHODS AND MATERIALS: To induce RC, C3H mice received a single radiation dose of 20Gy delivered through two beams. Mice were subjected to weekly micturition measurements to assess changes in urinary frequency. At the end of the study, bladder tissues were processed for histology. RESULTS: Radiation was well tolerated as no change in weight was observed in the weeks post treatment, and there was no hair loss at the irradiation sites. Starting at 17 weeks post treatment, micturition frequency was significantly higher in irradiated mice versus control animals. Pathological changes include fibrosis, inflammation, urothelial thinning and necrosis. At a site of severe insult, we observed telangiectasia, absence of Uroplakin-3 and E-cadherin relocalization. CONCLUSIONS: We developed a RC model that mimics the human pathology and functional changes. Furthermore, radiation exposure attenuates the urothelial integrity long-term allowing for potential continuous irritability of the bladder wall from exposure to urine. Future studies will focus on the underlying molecular changes associated with this condition and investigate novel treatment strategies.