

OAKLAND UNIVERSITY WILLIAM BEAUMONT SCHOOL OF MEDICINE

PUBLICATION LIST

October - December 2017

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Abbott EE, **Chan JC, Boura J and Novotny NM** (2017). "In pursuit of the most cost-effective pediatric laparoscopic appendectomy: The effect of disposable instrument choice on operative time and surgeon-controllable cost." Journal of Laparoendoscopic & Advanced Surgical Techniques 27(12): 1309-1313.

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OUWB Medical Student Author

Department of Biomedical Sciences (BH)

Department of Surgery

Background: There is a movement toward cost savings in healthcare worldwide. Surgeons can affect two main cost variables in an operation (controllable cost): disposables and time. Our hypothesis is that increasing disposable costs do not change outcome or operative time, but simply increases controllable cost. Methods: We retrospectively reviewed patients younger than the age of 18 years undergoing laparoscopic appendectomies for nonperforated appendicitis from January 2013 to November 2016. Data obtained included demographic information in addition to intraoperative details, including disposables used and associated cost, resident participation, operative time, and final pathology. Patients were excluded if perforation was present as confirmed by operative findings or pathology (Kansas City definition). Patients were also excluded if concurrent procedures were performed during the appendectomy. Results: We reviewed 918 patients and excluded 288 for a total of 690. Disposable cost, operative time, and complications were compared between cases with a resident present and those without. Residents did not increase the use of disposables, but did increase operative time and therefore the total controllable cost. Transumbilical laparoscopic-assisted technique was significantly faster with lower controllable cost when compared with all other methods. Using disposable trocars with an endostapler was the second fastest and second lowest controllable cost and retained a significant difference when compared with most other methods. Endoloop methods did not show overall controllable cost savings versus the vast majority of methods. Conclusions: To maximize controllable cost savings, we recommend a transumbilical laparoscopic-assisted appendectomy or a standard three-port laparoscopic appendectomy, with disposable trocars and the endostapler.

Ali-Ahmed F and **Halalau A** (2017). "Mycoplasma pneumonia: An unrecognized cause of fever of unknown origin in an adult." Case Reports in Infectious Diseases 2017(Article ID 6854913): 4.

[Full-Text](#)

Department of Internal Medicine

A 26-year-old female was admitted for fever of unknown origin (FUO), headaches, left ankle edema, and a lower extremity rash consistent with erythema nodosum. She had no respiratory symptoms or family history of autoimmune diseases. A chest X-ray was negative for pneumonia or hilar adenopathy. Extensive autoimmune workup was negative. A chest, abdomen, and pelvis computed tomography scan was unremarkable and laboratory studies revealed no source of infection. On hospital day 5, the patient developed amild productive cough. Her Mycoplasma pneumonia (MP) IgM was high, confirming the diagnosis of MP induced FUO. She was started on azithromycin 500mg daily and within 24 hours her fevers and headaches resolved. Her left ankle edema and EN gradually improved over a course of a few weeks. This case report highlights the need for MP testing in the evaluation of fever of unknown origin, even in the absence of pulmonary manifestations.

Amin M, Shaheen K, Stender M, Jaiyesimi I, Chancellor MB, Bartolone SN, Veerecke A and **Lamb LE** (2017).

"Crowdsourcing disease biomarker discovery research; The IP4IC study." Case Reports in Oncological Medicine. ePub Ahead of Print.

[Full-Text](#)

Department of Pathology

Department of Surgery

Department of Internal Medicine

Department of Urology

PURPOSE: Biomarker discovery is limited by readily assessable, cost efficient, human samples available in large numbers that represent the entire heterogeneity of the disease. We developed a novel active participation crowdsourcing method to develop a Bladder Permeability Defect Risk Score (BP-RS) based on non-invasive urinary cytokines to discriminate Interstitial cystitis/bladder pain syndrome (IC/BPS) with Hunner's lesion (UIC) patients from controls and IC patients without Hunner's lesions. MATERIALS AND METHODS: A national crowdsourcing study was done in cooperation with the Interstitial Cystitis Association. Patients answered demographic, symptom severity, and urinary frequency questionnaires on a HIPAA compliant website. Urine samples were collected at home, stabilized with a preservative and sent to Beaumont for analysis. Expression of three urinary cytokines was used in a machine learning algorithm to develop the BP-RS. RESULTS: IP4IC study collected 448 urine samples consisting of 153 IC patients (147 female, 6 male), of which 54 were UIC patients (50 females, 4 male), 159 female controls and 136 male controls. Controls were age-matched.. A defined BP-RS was calculated to predict UIC, or a bladder permeability defect etiology, with 89% validity. CONCLUSIONS: This novel participation crowdsourcing study collected a large number of urine samples from 46 states collected at home, shipped, and stored at room temperature. Using a machine learning algorithm, we developed the BP-RS to quantify UIC risk, indicative of a bladder permeability defect etiology. The BP-RS is the first validated urine biomarker assay for IC/BPS and one of the first biomarker assays to be developed using crowdsourcing.

Arcila-Ruiz MJ, Assimios DG, Brucker BM, **Chancellor MB**, Druskin SC, Curtis Nickel J, Partin AW and Shapiro E (2017).

"Best of the 2017 AUA annual meeting: Highlights from the 2017 American Urological Association Annual Meeting, May 12-16, 2017, Boston, MA." Reviews in Urology 19(3): 169-179.

[Full-Text](#)

Department of Urology

Bahado-Singh R, Poon LC, Yilmaz A, Syngelaki A, Turkoglu O, Kumar P, Kirma J, Allos M, Accurti V, Li JS, Zhao P, **Graham SF**, Cool DR and Nicolaidis K (2017). "Integrated proteomic and metabolomic prediction of term preeclampsia." *Scientific Reports* 7(Article Number: 16189): 10.

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Department of Obstetrics and Gynecology

Term preeclampsia (tPE), ≥ 37 weeks, is the most common form of PE and the most difficult to predict. Little is known about its pathogenesis. This study aims to elucidate the pathogenesis and assess early prediction of tPE using serial integrated metabolomic and proteomic systems biology approaches. Serial first-(11-14 weeks) and third-trimester (30-34 weeks) serum samples were analyzed using targeted metabolomic (¹H-NMR and DI-LC-MS/MS) and proteomic (MALDI-TOF/TOF-MS) platforms. We analyzed 35 tPE cases and 63 controls. Serial first-(sphingomyelin C18:1 and urea) and third-trimester (hexose and citrate) metabolite screening predicted tPE with an area under the receiver operating characteristic curve (AUC) (95% CI) = 0.817 (0.732-0.902) and a sensitivity of 81.6% and specificity of 71.0%. Serial first [TATA box binding protein-associated factor (TBP)] and third-trimester [Testis-expressed sequence 15 protein (TEX15)] protein biomarkers highly accurately predicted tPE with an AUC (95% CI) of 0.987 (0.961-1.000), sensitivity 100% and specificity 98.4%. Integrated pathway over-representation analysis combining metabolomic and proteomic data revealed significant alterations in signal transduction, G protein coupled receptors, serotonin and glycosaminoglycan metabolisms among others. This is the first report of serial integrated and combined metabolomic and proteomic analysis of tPE. High predictive accuracy and potentially important pathogenic information were achieved.

Barnes W, Hothem Z and **Novotny N** (2017). "Thoracoscopic sympathectomy," In Walsh DS, Ponsky TA and Bruns NE (ed). *The SAGES Manual of Pediatric Minimally Invasive Surgery*. Cham: Springer International Publishing. pp: 107-126.

[Full-Text](#)

Department of Surgery

Hyperhidrosis refers to pathologically excessive sweating which can be primary or secondary in nature. Primary focal hyperhidrosis has been estimated to affect 0.6–3 % of the population and can be truly disabling. Although some promote antiperspirants, botulinum toxin injections, or systemic anticholinergics, others promote thoracoscopic sympathectomy as early definitive treatment to avoid the embarrassment and potential withdrawal from society often plaguing these children. Thoracoscopic sympathectomy can be done in childhood, and long-term satisfaction has been shown to be highest when operating on children less than 14 years of age. Thoracoscopic sympathectomy is a safe procedure with high success rates and does not require advanced endoscopic skills though a clear understanding of the anatomy and steps of the procedure will prevent morbidity. The most common risk is compensatory hyperhidrosis, which seems less frequent in children. However, even with this complication, overall patient satisfaction remains high postoperatively. This chapter will focus on successful techniques for performing this procedure.

Basir M, Schreiber T, **Dixon S**, Alaswad K, Patel K, **Almany S**, Khandelwal A, George A, Ashbrook M, Blank N, Sareen N and O'Neill W (2017). "Feasibility of early mechanical circulatory support in acute myocardial infarction complicated by cardiogenic shock: The Detroit cardiogenic shock initiative." *Journal of the American College of Cardiology* 70(18): B43-B44.

[Full-Text](#)

Department of Internal Medicine

Blatt AZ, Saggi G, **Cortes C**, Herbert AP, Kavanagh D, Ricklin D, Lambris JD and Ferreira VP (2017). "Factor H C-terminal domains are critical for regulation of platelet/granulocyte aggregate formation." *Frontiers in Immunology* 8(Nov): 1-17.

[Full-Text](#)

Department of Biomedical Sciences (OU)

Platelet/granulocyte aggregates (PGAs) increase thromboinflammation in the vasculature, and PGA formation is tightly controlled by the complement alternative pathway (AP) negative regulator, Factor H (FH). Mutations in FH are associated with the prothrombotic disease atypical hemolytic uremic syndrome (aHUS),

yet it is unknown whether increased PGA formation contributes to the thrombosis seen in patients with aHUS. Here, flow cytometry assays were used to evaluate the effects of aHUS-related mutations on FH regulation of PGA formation and characterize the mechanism. Utilizing recombinant fragments of FH spanning the entire length of the protein, we mapped the regions of FH most critical for limiting AP activity on the surface of isolated human platelets and neutrophils, as well as the regions most critical for regulating PGA formation in human whole blood stimulated with thrombin receptor-activating peptide (TRAP). FH domains 19-20 were the most critical for limiting AP activity on platelets, neutrophils, and at the platelet/granulocyte interface. The role of FH in PGA formation was attributed to its ability to regulate AP-mediated C5a generation. AHUS-related mutations in domains 19-20 caused differential effects on control of PGA formation and AP activity on platelets and neutrophils. Our data indicate FH C-terminal domains are key for regulating PGA formation, thus increased FH protection may have a beneficial impact on diseases characterized by increased PGA formation, such as cardiovascular disease. Additionally, aHUS-related mutations in domains 19-20 have varying effects on control of TRAP-mediated PGA formation, suggesting that some, but not all, aHUS-related mutations may cause increased PGA formation that contributes to excessive thrombosis in patients with aHUS.

Bryant JR, Andrade P, Hajjar RT, Lumley CR and **Chaiyasate K** (2017). "Malleolar ulceration induced by hydroxyurea therapy for chronic eosinophilia." Journal of the American College of Clinical Wound Specialists. ePub Ahead of Print.

[Full-Text](#)

Department of Surgery

A 59-year-old African American female presented to a plastic surgery office in consultation for a very painful non-healing wound of her right lateral malleolus. An incisional biopsy was performed and ultimately a diagnosis of hydroxyurea-induced ulcer was concluded. Descriptions of this entity are rare in the surgical and wound care professional literature. This diagnosis does appear in the hematology/oncology literature; however, these practitioners may not be the first to examine a patient with the development of such an ulcer. This article presents the pathophysiology and clinical presentation of hydroxyurea-induced ulceration as well as the characteristics of hydroxyurea-induced ulceration in addition to the case study.

Bukhsh MA, Speyer CL, Jafry WS, Sexton RE, **Thomas D** and Gorki D (2017). "Riluzole synergizes with paclitaxel to induce apoptosis and inhibit cell growth in triple negative breast cancer." Cancer Research 77(13): 4039.

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OUWB Medical Student Author

Department of Biomedical Sciences (BH)

Introduction: Systemic treatment for triple negative breast cancer (TNBC) includes paclitaxel, which works by inhibiting the breakdown of microtubules. We previously observed that riluzole, an FDA-approved drug for the treatment of amyotrophic lateral sclerosis, can inhibit TNBC proliferation, invasion, and colony formation. We now test whether riluzole can act synergistically with paclitaxel to inhibit TNBC growth and induce apoptosis in TNBC. Methods: After treatment of various TNBC cell lines with constant ratio concentrations of riluzole and paclitaxel we conducted cell proliferation transformation assays (MTT) to measure cell inhibition potential. Synergy or additivity was determined by the Chou-Talalay using Compusyn software. PARP cleavage normalized to GAPDH was also measured by Western blot to estimate apoptosis due to the riluzole-paclitaxel combination. In vivo synergy was studied using a xenograft study with MDA-MB- 231, a human TNBC cell line sensitive to riluzole. Results: MTT results show that riluzole and paclitaxel work synergistically to inhibit cell proliferation in all TNBC cell lines tested, as determined by isobolograms and CI values <1. The strongest synergistic effect was observed in the cell lines SUM159, SUM149, and SUM229, where synergism occurred at Fa values as low as 0.5 (50% inhibition of cell proliferation). Measuring PARP cleavage, we demonstrated that the riluzole-paclitaxel drug combination induces greater apoptosis than does either drug alone. The significant impact of the drug combination was best demonstrated in cell lines SUM159, SUM149 and SUM229, but was observed in all cell lines tested. In the xenograft study, the highest non-toxic dose of paclitaxel (7.2 mg/kg) combined with riluzole resulted in 8/9 tumor-free mice, with a tumor growth inhibition ratio (T/C) of 0%, where <10% is considered highly therapeutic. This result was better than riluzole monotherapy (0/9 tumor-free and T/C = 99%) or paclitaxel monotherapy (4/8 tumor-free

and T/C = 8%). Conclusions: Our results demonstrate that the addition of riluzole to paclitaxel results in at least additive and in many cases synergistic effects against TNBC. Our observations thus suggest that repurposing riluzole, which is an oral drug with an excellent safety profile, to add to paclitaxel to treat TNBC represents a potential strategy to improve the efficacy of adjuvant and neoadjuvant treatments for TNBC and/or reduce chemotherapy doses and toxicity in patients. Our data support the need to proceed to clinical trials to test this approach in patients.

Chinnaiyan P, Won M, Wen PY, Rojiani AM, Werner-Wasik M, Shih HA, Ashby LS, Yu HM, Stieber VW, Malone SC, Fiveash JB, Mohile NA, Ahluwalia MS, Wendland MM, Stella PJ, Kee AY and Mehta MP (2017). "A randomized phase II study of everolimus in combination with chemoradiation in newly diagnosed glioblastoma: Results of NRG Oncology RTOG 0913." *Neuro-Oncology*. ePub Ahead of Print.

[Full-Text](#)

Department of Radiation Oncology

Background: This Phase II study was designed to determine the efficacy of the mTOR inhibitor everolimus administered daily with conventional radiation therapy and chemotherapy in patients with newly diagnosed glioblastoma. Methods: Patients were randomized to radiation therapy with concurrent and adjuvant temozolomide with or without daily everolimus (10 mg). The primary endpoint was progression-free survival (PFS) and the secondary endpoints were overall survival (OS) and treatment-related toxicities. Results: A total of 171 patients were randomized and deemed eligible for this study. Patients randomized to receive everolimus experienced both a significant increase in Grade 4 toxicities, including lymphopenia and thrombocytopenia, and treatment-related deaths. There was no significant difference in PFS between patients randomized to everolimus compared to control (median PFS time: 8.2 vs. 10.2 months, respectively; $p=0.79$). OS for patients randomized to receive everolimus was inferior to the control patients (median survival time (MST): 16.5 vs. 21.2 months, respectively; $p=0.008$). A similar trend was observed in both 06-methylguanine-DNA-methyltransferase (MGMT) promoter hypermethylated and unmethylated tumors. Conclusion: Combining everolimus with conventional chemoradiation leads to increased treatment-related toxicities and did not improve PFS in patients with newly diagnosed glioblastoma. Although the MST in patients receiving everolimus was comparable to contemporary studies, it was inferior to the control in this randomized study.

Cool DR, Nicolaides K, Halka JT, Vasyluk A, DeMare AM, **Janczyk RJ** and **Iacco AA** (2017). "Robotic and hybrid robotic transversus abdominis release may be performed with low length of stay and wound morbidity." *Scientific Reports*. ePub Ahead of Print.

[Full-Text](#)

Department of Surgery

The objective of our study was to compare length of stay and wound complications after hybrid robotic transversus abdominis release (hrTAR) vs. robotic transversus abdominis release (rTAR) Two cohorts of patients undergoing robotic (rTAR) and hybrid robotic (hrTAR) performed by two surgeons at a single institution were analyzed. Mean length of stay (LOS) and incidence of surgical site occurrences (SSO) were compared. 57 patients undergoing rTAR and 25 patients undergoing hrTAR were analyzed. The hrTAR group had larger mean hernia dimensions and a larger proportion of men but otherwise the patient cohorts were similar. LOS was not statistically different between rTAR and hrTAR (2.8 vs 3.7 days $p = 0.06$). We found no difference in incidence of surgical site occurrences between the two groups (7.0% vs 4.0% $p = 0.52$). Hybrid robotic assisted TAR allows for repair of complex ventral hernias with similar lengths of stay and wound morbidity to pure robotic repairs.

Copelan A, Chehab M, Brinjikji W, Wilseck Z, Kallmes DF and **Wilseck J** (2017). "Opercular index score: A CT angiography-based predictor of capillary robustness and neurological outcomes in the endovascular management of acute ischemic stroke." *Journal of Neurointerventional Surgery* 9(12): 1179-1186.

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Department of Diagnostic Radiology and Molecular Imaging

Background Many CT angiography (CTA) collateral scoring systems are either subjective or complex and time

consuming. Objective To evaluate the correlation between a CTA collateral scoring system - the Opercular Index Score (OIS) - with neurological outcomes at 90days following endovascular treatment for acute ischemic stroke (AIS) secondary to large vessel occlusion. Methods Fifty-five patients with AIS due to distal internal carotid artery, M1, or proximal M2 occlusions who underwent endovascular treatment were included. OIS was retrospectively calculated from CTA images, reconstructed from CT perfusion imaging, as the ratio of opacified M3 opercular branches in the Sylvian fissure on the unaffected side to those on the stroke side and dichotomized into favorable (OIS \leq 2) and poor (OIS $>$ 2). The ability of OIS to predict good neurological outcomes (modified Rankin Scale score \leq 2 at 90days) was assessed using sensitivity, specificity, and area under the curve (AUC) with receiver operating characteristic analysis. Results Thirty-five patients had a favorable OIS and 20 patients had a poor OIS. Patients with favorable OIS had an 80.0% (n=28) rate of good neurological outcomes compared with 15.0% (n=3) of patients with a poor OIS (p<0.0001). On multivariate logistic regression analysis adjusting for baseline National Institutes of Health Stroke Scale score, OIS, and device used, favorable OIS was the only variable independently associated with good neurological outcome (OR=17.2, 95% CI 3.8 to 104.3) and demonstrated a sensitivity of 90.3% and specificity of 70.8% with an AUC of 0.822. Conclusions OIS is a simple and practical non-invasive scoring system that can be used to predict collateral robustness and good neurological outcome among patients with AIS undergoing endovascular treatment.

Cornett PA, Williams C, Alweis RL, McConville J, Frank M, **Dalal B**, Kopelman RI, Luther VP, O'Connor A B and Muchmore EA (2017). "Problematic communications during 2016 fellowship recruitment in internal medicine." Case Reports in Hematology 7(5): 277-281.

[Full-Text](#)

Department of Internal Medicine

Some internal medicine residency program directors have expressed concerns that their third-year residents may have been subjected to inappropriate communication during the 2016 fellowship recruitment season. The authors sought to study applicants' interpersonal communication experiences with fellowship programs. Many respondents indicated that they had been asked questions that would constitute violations of the National Residency Matching Program (NRMP) Communications Code of Conduct agreement, including how they plan to rank specific programs. Moreover, female respondents were more likely to have been asked questions during interview experiences about other programs to which they applied, and about their family plans. Post-interview communication policies were not made clear to most applicants. These results suggest ongoing challenges for the internal medicine community to improve communication with applicants and uniform compliance with the NRMP communications code of conduct during the fellowship recruitment process.

Dave C, **Peters KM** and Ehlert M (2017). "Sacral neuromodulation in interstitial cystitis," In Gordon DA and Katlic MR (ed). Pelvic Floor Dysfunction and Pelvic Surgery in the Elderly: An Integrated Approach. New York, NY: Springer New York. pp: 229-236.

[Full-Text](#)

Department of Urology

Pelvic pain syndromes including IC/BPS are an extremely prevalent and expensive constellation of diseases that are amongst the most common reasons why patients visit their doctor. Treatment should always progress from the most conservative to least conservative therapies. SNM has emerged as a safe and efficacious treatment option for refractory IC/BPS and other dysfunctional voiding and pelvic pain disorders as evidenced by numerous well-designed studies described in this chapter. All physicians who treat this growing patient population should be well versed in the history, methodology, procedure, and outcomes associated with SNM. Alternate methods of peripheral neurologic control of the bladder such as PNM and PTNS should be considered as the next step or as an adjunct to patients who have failed SNM. Neuromodulation has revolutionized the treatment of dysfunctional voiding and pelvic pain disorders and will likely continue to be a mainstay within the difficult treatment algorithm. The history, methodology, procedure, and outcomes are discussed in this chapter.

Eckleberry-Hunt J, Kirkpatrick H and **Hunt RB** (2017). "Physician burnout and wellness," In Brower KJ and Riba MB (ed). Physician Mental Health and Well-Being: Research and Practice. Cham: Springer International Publishing. pp: 3-32.

[Full-Text](#)

Department of Family Medicine

Physician stress and burnout are common in the practice of medicine and were once thought to be occupational hazards due to hard-driving personality traits. As a result, research focused on ways to help physicians cope with stress. Following decades of study, however, researchers believe that a significant portion of physician burnout is due to potentially modifiable workplace factors. While interventions still include teaching physicians ways to cope with stressful work, more attention is being given to how to change the healthcare workplace, not only to decrease physician burnout but also in order to improve patient quality and safety initiatives. This chapter defines burnout and outlines the historical context of its study and controversy over measurement. The chapter describes studies of physician burnout across the developmental spectrum and discusses the correlates. Finally, the chapter reviews effective intervention strategies and the movement to shift from burnout to physician wellness promotion.

Eckleberry-Hunt J, Kirkpatrick H, Taku K and **Hunt R** (2017). "Self-report study of predictors of physician wellness, burnout, and quality of patient care." Southern Medical Journal 110(4): 244-248.

[Full-Text](#)

Department of Family Medicine

Objective The goal of this self-report study was to examine the relation of work variables, self-rated health and mental health status, and perceived social support to physician wellness, physician burnout, and quality of patient care. **Methods** We administered a demographics questionnaire, the Physician Wellness Inventory, the Maslach Burnout Inventory, and the Patient Care Scale to a random sample of full physician members of the American Academy of Family Physicians. We performed regression analyses on self-reported health status, work variables, and social support data as predictor variables and the subscales from the Physician Wellness Inventory, Maslach Burnout Inventory, and Patient Care Scale as the outcome variables. **Results** The response rate was 22%. Self-reported mental health status significantly predicted all of the wellness scales, the burnout scales, and the quality of patient care. The ability to manage the workload was the second strongest predictor of multiple scales. **Conclusions** More work should be done to explore the factors related to physicians' self-ratings of mental health status and what that means to them. Also, it is important to study whether self-rated mental health status is related to objective patient care quality measures.

Elias ME, Al-Mudares F, **Gonzalez Rangal IE** and **Espinosa MR** (2017). "A cardiac mass in a neonate." Global Pediatric Health 4(Nov): 1-2.

[Full-Text](#)

Department of Pediatrics

Engoren M, Rochlen LR, Diehl MV, **Sherman SS**, Jewell E, Golinski M, Begeman P and Cavanaugh JM (2017). "Mechanical strain to maxillary incisors during direct laryngoscopy." BMC Anesthesiology 17(1): 1-8.

[Full-Text](#)

Department of Internal Medicine

Background: While most Direct laryngoscopy leads to dental injury in 25-39% of cases. Dental injury occurs when the forces and impacts applied to the teeth exceed the ability of the structures to dissipate energy and stress. The purpose of this study was to measure strain, (which is the change produced in the length of the tooth by a force applied to the tooth) strain rate, and strain-time integral to the maxillary incisors and determine if they varied by experience, type of blade, or use of an alcohol protective pad (APP). **Methods:** A mannequin head designed to teach and test intubation was instrumented with eight single axis strain gauges placed on the four maxillary incisors: four on the facial or front surface of the incisors and four on the lingual or back, near the insertion of the incisor in the gums to measure bending strain as well as compression. Anesthesiology faculty, residents, and certified registered nurse anesthetists intubated with Macintosh and Miller blades with and without APP. Using strain-time curves, the maximum strain, strain rate,

and strain time integral were calculated. Results: Across the 92 subjects, strain varied 8-12 fold between the 25th and 75th percentiles for all four techniques, but little by experience, while strain rate and strain integral varied 6-13 fold and 15-26 fold, respectively, for the same percentiles. Intubators who had high strain values with one blade tended to have high strains with the other blade with and without the APP (all pairwise correlation $\rho = 0.42-0.63$). Conclusions: Strain varies widely by intubator and that the use of the APP reduces strain rate which may decrease the risk of or the severity of dental injury.

Ferruffino-Schmidt MC, Medeiros LJ, Liu H, Clemens MW, Hunt KK, Laurent C, Lofts J, **Amin MB**, Ming Chai S, Morine A, Di Napoli A, Dogan A, Parkash V, Bhagat G, Tritz D, Quesada AE, Pina-Oviedo S, Hu Q, Garcia-Gomez FJ, Jose Borrero J, Horna P, Thakral B, Narbaitz M, Hughes RC, 3rd, Yang LJ, Fromm JR, Wu D, Zhang D, Sohani AR, Hunt J, Vadlamani IU, Morgan EA, Ferry JA, Sziget R, J CT, Granados R, Dertinger S, Offner FA, Pircher A, Hosry J, Young KH and Miranda RN (2017). "Clinicopathologic features and prognostic impact of lymph node involvement in patients with breast implant-associated anaplastic large cell lymphoma." [American Journal of Surgical Pathology](#). ePub Ahead of Print.

[Full-Text](#)

Department of Pathology

Breast implant-associated anaplastic large cell lymphoma (BI-ALCL) is a rare T-cell lymphoma that arises around breast implants. Most patients manifest with periprosthetic effusion, whereas a subset of patients develops a tumor mass or lymph node involvement (LNI). The aim of this study is to describe the pathologic features of lymph nodes from patients with BI-ALCL and assess the prognostic impact of LNI. Clinical findings and histopathologic features of lymph nodes were assessed in 70 patients with BI-ALCL. LNI was defined by the histologic demonstration of ALCL in lymph nodes. Fourteen (20%) patients with BI-ALCL had LNI, all lymph nodes involved were regional, the most frequent were axillary (93%). The pattern of involvement was sinusoidal in 13 (92.9%) cases, often associated with perifollicular, interfollicular, and diffuse patterns. Two cases had Hodgkin-like patterns. The 5-year overall survival was 75% for patients with LNI and 97.9% for patients without LNI at presentation ($P=0.003$). Six of 49 (12.2%) of patients with tumor confined by the capsule had LNI, compared with LNI in 8/21 (38%) patients with tumor beyond the capsule. Most patients with LNI achieved complete remission after various therapeutic approaches. Two of 14 (14.3%) patients with LNI died of disease compared with 0/56 (0%) patients without LNI. Twenty percent of patients with BI-ALCL had LNI by lymphoma, most often in a sinusoidal pattern. We conclude that BI-ALCL beyond capsule is associated with a higher risk of LNI. Involvement of lymph nodes was associated with decreased overall survival. Misdiagnosis as Hodgkin lymphoma is a pitfall.

Fontanesi J, Kopitzki B and **Zekman R** (2017). "Skin: The case for altered fractionation in the treatment of both malignant and benign conditions," (ed). Berlin, Heidelberg: Springer Berlin Heidelberg. pp: 1-33.

[Full-Text](#)

Department of Neurosurgery

Department of Internal Medicine

While most physicians recognize that skin is our largest organ, most lay people are unaware of this fact and the important role it plays not only in protection but also in temperature regulation and other activities that are essential to the overall general health of each individual.

Gillera JP and Gaines N (2017). "Posterior colporrhaphy (with or without perineorrhaphy)," In Zimmern PE and De EJB (ed). [Native Tissue Repair for Incontinence and Prolapse](#). Cham: Springer International Publishing. pp: 167-177.

[Full-Text](#)

Department of Urology

Evaluation and management of posterior prolapse can be challenging, as patients with rectocele can present with a variety of non-specific complaints, including vaginal bulge, bowel symptoms such as constipation or bloating, need to splint, perineal ballooning, or pelvic pressure. Unlike the anterior compartment, symptoms do not correlate with anatomy, and thus thorough history and physical exam are critical. Pre-operative radiographic evaluation has a limited role and typically does not change management.

Goldstein JA (2017). "Hemodynamic guidance of mitral paravalvular leak closure: The V is the key." Catheterization and Cardiovascular Interventions 90(5): 859-860.

[Full-Text](#)

Department of Internal Medicine

Goldstein JA (2017). "Peri-procedural myocardial infarction: Plaques and patients "at-risk"." Catheterization and Cardiovascular Interventions 90(6): 915-916.

[Full-Text](#)

Department of Internal Medicine

Grabowski CJ (2017). "Impact of holistic review on student interview pool diversity." Blood Advances. ePub Ahead of Print.

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Department of Biomedical Sciences (BH)

Diversity in the physician workforce lags behind the rapidly changing US population. Since the gateway to becoming a physician is medical school, diversity must be addressed in the admissions process. The Association of American Medical Colleges has implemented a Holistic Review Initiative aimed at assisting medical schools with broadening admission criteria to include relevant, mission-driven attributes and experiences in addition to academic preparation to identify applicants poised to meet the needs of a diverse patient population. More evidence is needed to determine whether holistic review results in a more diverse selection process. One of the keys to holistic review is to apply holistic principles in all stages of the selection process to ensure qualified applicants are not overlooked. This study examines whether the use of holistic review during application screening at a new medical school increased the diversity of applicants selected for interview. Using retrospective data from the first five application cycles at the Oakland University William Beaumont School of Medicine (OUWB), the author compared demographic and experiential differences between the applicants selected using holistic review, including experiences, attributes and academic metrics, to a test sample selected solely using academic metrics. The dataset consisted of the total group of applicants selected for interview in 2011 through 2015 using holistic review ($n = 2773$) and the same number of applicants who would have been selected for an interview using an academic-only selection model ($n = 2773$), which included 1204 applicants who were selected using both methods (final $n = 4342$). The author used a combination of cross-tabulation and analysis of variance to identify differences between applicants selected using holistic review and applicants in the test sample selected using only academics. The holistic review process yielded a significantly higher than expected percent of female (adj. resid. = 13.2, $p < .01$), traditionally underrepresented in medicine (adj. resid. = 15.8, $p < .01$), first generation (adj. resid. = 5.8, $p < .01$), and self-identified disadvantaged (adj. resid. = 11.5, $p < .01$) applicants in the interview pool than selected using academic metrics alone. In addition, holistically selected applicants averaged significantly more hours than academically selected students in the areas of pre-medical school paid employment ($F = 10.99$, mean difference = 657.99, $p < .01$) and community service ($F = 15.36$, mean difference = 475.58, $p < .01$). Using mission-driven, holistic admissions criteria comprised of applicant attributes and experiences in addition to academic metrics resulted in a more diverse interview pool than using academic metrics alone. These findings add support for the use of holistic review in the application screening process as a means for increasing diversity in medical school interview pools.

Greene JJ, **Naumann IC**, Poulik JM, Nella KT, Weberling L, Harris JP and Matsuoka AJ (2017). "The protean neuropsychiatric and vestibuloauditory manifestations of neurosarcoidosis." Audiology and Neurotology 22(4-5): 205-217. ePub Ahead of Print.

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Department of Surgery

Background: A rare subset of sarcoidosis, neurosarcoidosis, is reported to occur in 5-7% of sarcoid patients and can manifest in a variety of ways. The most common are facial paralysis and optic neuritis, less commonly causing cochleovestibulopathy, blindness, anosmia, and other cranial nerve (CN) palsies. The sensory deficit may be severe and psychiatric symptoms may result from the effects of the disease or steroid

treatment. Although MRI-compatible cochlear implants are now available, concerns about the feasibility of recoverable hearing with cochlear implantation in these patients as well as the practical difficulty of disease monitoring due to implant artifact must be considered. Results: We present 3 recent cases from different institutions. The first is a 39-year-old man with a history of progressively worsening hearing loss, followed by visual loss, delusions, agitation, ataxia, and musical auditory hallucinations, diffuse leptomeningeal enhancement on MRI with a normal serum angiotensin-converting enzyme (ACE) level but elevated cerebrospinal fluid (CSF) ACE levels, suggesting neurosarcoidosis, was treated with corticosteroids, and underwent successful cochlear implantation. The second is a 36-year-old woman with rapid-onset horizontal diplopia, left mixed severe sensorineural hearing loss (SNHL) and tinnitus, diffuse leptomeningeal enhancement on MRI, and progressive palsy of the left CNs IV, VI, VII, IX, X and XI, with altered mental status requiring admission following high-dose intravenous corticosteroids. The third is a 15-year-old boy who presented with sudden, bilateral, profound SNHL, recurrent headaches, and left facial weakness refractory to antivirals, ultimately diagnosed with neurosarcoidosis following an aborted cochlear implantation where diffuse inflammation was found, and histopathology revealed Schaumann bodies; he was treated with methotrexate and later underwent successful cochlear implantation. Conclusions: Neurosarcoidosis is an elusive diagnosis and can cause hearing loss and psychiatric symptoms. Cochlear implantation for patients with severe hearing loss should be considered once the diagnosis is confirmed, as it is possible to achieve a successful level of hearing. Psychiatric symptoms can manifest with the onset of neurosarcoidosis, result from CN deficits, or develop as a side effect from long-term, high-dose corticosteroids, and should be monitored carefully in patients with neurosarcoidosis.

Gupta P, Dave CN and **Peters KM** (2017). "Neuromodulation," In Moldwin RM (ed). Urological and Gynaecological Chronic Pelvic Pain: Current Therapies. Cham: Springer International Publishing. pp: 339-357.

[Full-Text](#)

Department of Urology

Neuromodulation is an effective treatment for pelvic floor disorders as it can affect both the spinal and cortical centers for voiding control. However, limited studies have shown success in the treatment of pelvic pain syndromes. Neuromodulation can be performed at the sacral or pudendal nerve as well as at the tibial nerve through percutaneous access. While these methods were primarily developed to treat overactive bladder symptoms, further study has shown that it may also be effective in reducing pain symptoms. This chapter reviews the mechanism of action for sacral, pudendal, and percutaneous tibial nerve stimulation. The techniques for performing these procedures and the literature regarding their efficacy for pelvic pain syndromes will be reviewed. Clinical pearls and tips for counseling patients regarding these procedures are discussed.

Haggart JR, Newton MD, Ho A, Hartner S, **Baker KC**, Kurdziel MD and **Wiater JM** (2017). "± Wear rates of 32 mm and 40 mm glenospheres in a reverse total shoulder arthroplasty in vitro wear simulation model." Journal of Shoulder and Elbow Surgery 26(10): e320.

[Full-Text](#)

Department of Orthopedic Surgery

Purpose: Larger glenosphere diameters have been shown to increase prosthesis stability and impingement-free range of motion in reverse total shoulder arthroplasty (rTSA). Higher wear rates increase the potential for polyethylene wear-induced osteolysis and aseptic component loosening. The goal of this study is to evaluate the rate of polyethylene wear for 32 mm and 40 mm glenosphere sizes utilized in rTSA. It is hypothesized that increased polyethylene wear occurs with larger glenosphere diameters. Methods: Twelve commercially available CoCrMo glenospheres (size 32 mm and 40 mm, n = 6/group) and their respective humeral liners were subjected to 5 million cycles (MC) of a previously established wear simulation protocol, representing 5-7 years of device life. Two motion profiles, abduction-adduction (20-618N) and flexion-extension (20-927N), were alternated every 250,000 cycles. Individual stations were enclosed in bowls filled with bovine calf serum as lubrication. Every 250,000 cycles, liners were removed and mass loss was determined gravimetrically according to ISO Standard 14242-2 and converted to volume loss and volumetric wear rate (VWR). At 0, 2.5, and 5 MC, liners were imaged using micro-computer tomography (μ CT) to

determine linear surface deviation of the bearing surface due to wear. Liner volumes were isolated from μ CT scans, volumes were co-registered, and surface deviations between time points were mapped across the entire bearing surface and by quadrant. White light interferometry was also performed at five locations of the humeral liners at 0, 2.5, and 5 MC to determine changes in micro-scale surface roughness. Wear particles were isolated from test serum from both motion profiles at the beginning and conclusion of testing and imaged via scanning electron microscopy (SEM) for characterization of wear particle morphology. Results: Total volume loss was significantly higher in 40 mm liners at 0.5 MC and all time points from 1 MC onward (Fig. 1, A). VWR was significantly higher in 40 mm liners for all flexion-extension time points (0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, and 5 MC) as well as at 1.25 and 2.75 MC abduction-adduction time points (Fig. 1, B). Overall, the flexion-extension motion profile induced higher VWRs than abduction-adduction for both liner geometries. Representative μ CT surface deviation maps are shown in Figure 1, C and demonstrate concentration of bearing surface deviation on the inferior aspect of the liner. Mean bearing surface deviation between 0 and 5 MC was significantly higher on 32 mm liners (0.35 ± 0.03 mm) compared to (Figure Presented) 40 mm liners (0.28 ± 0.01 mm, $P = .002$). Surface roughness (S_a) was 0.033 ± 0.003 μ m and 0.025 ± 0.003 μ m for 32 mm and 40 mm humeral liners, respectively, at 0 cycles and 0.022 ± 0.003 μ m and 0.022 ± 0.003 μ m at 5 MC cycles, respectively. Conclusion: Larger glenospheres result in significantly greater polyethylene volume loss and volumetric wear rates, while smaller glenospheres lead to greater polyethylene surface deviations. These results are consistent with the previously established relationships between femoral head size and volumetric and linear wear rates in total hip arthroplasty. The enhanced stability provided by larger glenospheres must be weighed against the potential for increased polyethylene wear and wear-induced osteolysis to reduce complication rates in rTSA.

Haines DE, Wong W, Canby R, Jewell C, Houmsse M, Pederson D, Sugeng L, Porterfield J, Kottam A, Pearce J, Valvano J, Michalek J, Trevino A, Sagar S and Feldman MD (2017). "Validation of a defibrillation lead ventricular volume measurement compared to three-dimensional echocardiography." Heart Rhythm 14(10): 1515-1522.

[Full-Text](#)

Department of Internal Medicine

BACKGROUND There is increasing evidence that using frequent invasive measures of pressure in patients with heart failure results in improved outcomes compared to traditional measures. Admittance, a measure of volume derived from preexisting defibrillation leads, is proposed as a new technique to monitor cardiac hemodynamics in patients with an implantable defibrillator. **OBJECTIVE** The purpose of this study was to evaluate the accuracy of a new ventricular volume sensor (VVS, CardioVol) compared with 3-dimensional echocardiography (echo) in patients with an implantable defibrillator. **METHODS** Twenty-two patients referred for generator replacement had their defibrillation lead attached to VVS to determine the level of agreement to a volume measurement standard (echo). Two opposite hemodynamic challenges were sequentially applied to the heart (overdrive pacing and dobutamine administration) to determine whether real changes in hemodynamics could be reliably and repeatedly assessed with VVS. Equivalence of end-diastolic volume (EDV) and stroke volume (SV) determined by both methods was also assessed. **RESULTS** EDV and SV were compared using VVS and echo. VVS tracked expected physiologic trends. EDV was modulated -10% by overdrive pacing (14 mL). SV was modulated -13.7% during overdrive pacing (-6 mL) and increased over baseline +14.6% (+8 mL) with dobutamine. VVS and echo mean EDVs were found statistically equivalent, with margin of equivalence 13.8 mL ($P < .05$). Likewise, mean SVs were found statistically equivalent with margin of equivalence 15.8 mL ($P < .05$). **CONCLUSION** VVS provides an accurate method for ventricular volume assessment using chronically implanted defibrillator leads and is statistically equivalent to echo determination of mean EDV and SV.

Haines DE, Wright M, Harks E, Deladi S, Fokkenrood S, Brink R, Belt H, Kolen AF, Mihajlovic N, Zuo F, Rankin D, Stoffregen W, Cockayne D and Cefalu J (2017). "Near-field ultrasound imaging during radiofrequency catheter ablation: Tissue thickness and epicardial wall visualization and assessment of radiofrequency ablation lesion formation and depth." Circulation: Arrhythmia and Electrophysiology 10(12): 1-12.

[Full-Text](#)

Department of Internal Medicine

Background Safe and successful radiofrequency catheter ablation depends on creation of transmural lesions without collateral injury to contiguous structures. Near-field ultrasound (NFUS) imaging through transducers in the tip of an ablation catheter may provide important information about catheter contact, wall thickness, and ablation lesion formation. Methods and Results NFUS imaging was performed using a specially designed open-irrigated radiofrequency ablation catheter incorporating 4 ultrasound transducers. Tissue/phantom thickness was measured in vitro with varying contact angles. In vivo testing was performed in 19 dogs with NFUS catheters positioned in 4 chambers. Wall thickness measurements were made at 222 sites (excluding the left ventricle) and compared with measurements from intracardiac echocardiography. Imaging was used to identify the epicardium with saline infusion into the pericardial space at 39 sites. In vitro, the measured exceeded actual tissue/phantom thickness by 13% to 20%. In vivo, NFUS reliably visualized electrode-tissue contact, but sensitivity of epicardial imaging was 92%. The chamber wall thickness measured by NFUS correlated well with intracardiac echocardiography ($r=0.86$; $P<0.0001$). Sensitivity of lesion identification by NFUS was 94% for atrial and 95% for ventricular ablations. NFUS was the best parameter to predict lesion depth in right and left ventricle ($r=0.47$; $P<0.0001$; multiple regression $P=0.0025$). Lesion transmuralities were correctly identified in 87% of atrial lesions. Conclusions NFUS catheter imaging reliably assesses electrode-tissue contact and wall thickness. Its use during radiofrequency catheter ablation may allow the operator to assess the depth of ablation required for transmural lesion formation to optimize power delivery. © 2017 American Heart Association, Inc.

Halka JT, Vasyluk A, DeMare AM, **Janczyk RJ** and **Iacco AA** (2017). "Robotic and hybrid robotic transversus abdominis release may be performed with low length of stay and wound morbidity." American Journal of Surgery. ePub Ahead of Print.

[Full-Text](#)

Department of Surgery

The objective of our study was to compare length of stay and wound complications after hybrid robotic transversus abdominis release (hrTAR) vs. robotic transversus abdominis release (rTAR) Two cohorts of patients undergoing robotic (rTAR) and hybrid robotic (hrTAR) performed by two surgeons at a single institution were analyzed. Mean length of stay (LOS) and incidence of surgical site occurrences (SSO) were compared. 57 patients undergoing rTAR and 25 patients undergoing hrTAR were analyzed. The hrTAR group had larger mean hernia dimensions and a larger proportion of men but otherwise the patient cohorts were similar. LOS was not statistically different between rTAR and hrTAR (2.8 vs 3.7 days $p = 0.06$). We found no difference in incidence of surgical site occurrences between the two groups (7.0% vs 4.0% $p = 0.52$). Hybrid robotic assisted TAR allows for repair of complex ventral hernias with similar lengths of stay and wound morbidity to pure robotic repairs. © 2017 Elsevier Inc.

Hamouri S and **Novotny NM** (2017). "Primary tracheal schwannoma a review of a rare entity: Current understanding of management and followup." Journal of Cardiothoracic Surgery 12(Nov): 1-5.

[Full-Text](#)

Department of Surgery

Background: Neurogenic tumors of the tracheobronchial tree are extremely rare and include neurofibroma and schwannoma. We report a case of primary recurrent tracheal schwannoma causing obstructive airway symptoms. Case Presentation: A 60-year-old man presented with obstructive airway symptoms due to recurrent tracheal schwannoma. Due to the recurrence, size of the tumor and low surgical risk, the patient was treated with tracheal resection. Conclusion: Primary endotracheal neurogenic tumors are extremely rare, but one should consider them in the differential diagnosis of persistent upper airway symptoms. While endoscopic therapies recur nearly a quarter of the time, surgical resections do not have any recorded

recurrences.

Hanzel GS (2017). "The transcatheter aortic valve replacement bounce-back does it matter? What can be done?" *JACC-Cardiovascular Interventions* 10(23): 2437-2439.

[Full-Text](#)

Department of Internal Medicine

Hehar J, Otoupalova E and **Grasso-Knight G** (2017). "It's in the receptors: A rare cause of fever and psychosis." *Chest* 152(4): A361.

[Full-Text](#)

Department of Internal Medicine

INTRODUCTION: Acute mental status changes with fever present a challenging medical emergency. Other than common infectious causes, a number of autoimmune and metabolic etiologies should be considered in the differential. Psychotic features can be a clue to underlying diagnosis. We present a rare case of psychosis and fever progressing rapidly into coma that was successfully diagnosed and treated. **CASE PRESENTATION:** A 59 year old female with no significant past medical history presented to the emergency room (ER) with mental status changes, confusion and psychotic behavior. Three days prior to admission she had headaches and fevers, and the night prior she was displaying suicidal behavior. In the ER the patient was afebrile but with heart rate up to 130's and SBP in 160's. She was initially very agitated and had to be restrained. Physical exam revealed no focal neurological deficits. Her evaluation included a normal head CT and a laboratory work-up demonstrating mild elevation in LFT's. She became more encephalopathic and a lumbar puncture was obtained demonstrating a lymphocytic pleocytosis. An MRI with and without contrast was normal. An EEG revealed mild slowing but no epileptiform discharges. She was started on acyclovir for possible encephalitis, however CSF studies remained negative. She developed episodes of severe autonomic instability requiring transfer to the intensive care unit. Further CSF studies were performed, returning positive for NMDA-receptor antibodies. She was started on intravenous immunoglobulin and solumedrol 1g daily for 5 days. A CT chest/abd/pelvis with IV contrast and pelvic ultrasound were performed to screen for occult malignancy and were normal. She developed worsening encephalopathy with rigidity and continuing hemodynamic instability. She then underwent plasmapheresis which was unsuccessful. Rituximab was initiated for 4 doses and IV magnesium was administered for her rigidity. One week afterwards, she started showing signs of improvement with attempts to move her extremities and eventually regaining the ability to have a conversation. **DISCUSSION:** Anti-NMDA receptor encephalitis is a rare autoimmune encephalitis. Prominent psychiatric features and autonomic instability are hallmarks of the disease. Anti-NMDA antibodies are diagnostic, and treatment options include steroids, plasmapheresis, IVIG and rituximab. **CONCLUSIONS:** As our case illustrates, autoimmune encephalitis should be considered in patients presenting with psychosis and autonomic instability, as these features are not commonly present in infectious or metabolic etiologies of acute encephalopathy.

Hlubocky J, Bhavnagri S, Swinford A, Mitri C, Rebner M and Pai V (2017). "Does the use of pretreatment MRI change the management of patients with newly diagnosed breast cancer?" *Breast Journal*. ePub Ahead of Print.

[Full-Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Breast MRI plays a critical role in the diagnosis and management of breast cancer. The purpose of this study is to evaluate the effect of preoperative breast MRI on the management of a large cohort of breast cancer patients at our institution. This study is a retrospective chart review of all newly diagnosed breast cancer patients who underwent preoperative breast MRI at our institution between January 1, 2004 and December 31, 2009. 1352 patients comprised the study population. 241 (17.8%) patients underwent a change in surgical management as a result of preoperative MRI. Patients with tumors in the lower inner quadrant and the central breast and those with pathology of invasive lobular carcinoma were significantly more likely to have their management changed by preoperative MRI. There was also a significant trend for larger tumors to be associated with a change in surgical management. No statistically significant association was found between breast density and change in management. This study supports the recommendation for the use of

preoperative breast MRI in the majority of newly diagnosed breast cancer patients, especially those with larger tumors, pathology of invasive lobular carcinoma, and tumors in the lower inner quadrant. Preoperative breast MRI is a useful tool for the evaluation of additional disease that led to a change in the surgical management of 17.8% of patients.

Ho A, Kurdziel MD, Koueiter DM and **Wiater JM** (2017). "Three-dimensional computed tomography measurement accuracy of varying Hill-Sachs lesion size." Journal of Shoulder and Elbow Surgery. ePub Ahead of Print.

[Full-Text](#)

Department of Orthopedic Surgery

Background: The glenoid track concept has been proposed to correlate shoulder stability with bone loss. Accurate assessment of Hill-Sachs lesion size preoperatively may affect surgical planning and postoperative outcomes; however, no measurement method has been universally accepted. This study aimed to assess the accuracy and reliability of measuring Hill-Sachs lesion sizes using 3-dimensional (3D) computed tomography (CT). Methods: Nine polyurethane humerus bone substitutes were used to create Hill-Sachs lesions of varying sizes with a combination of lesion depth (shallow, intermediate, and deep) and width (small, medium, and large). Specimens were scanned with a clinical CT scanner for size measurements and a micro-CT scanner for measurement of true lesion size. Six evaluators repeated measurements twice in a 2-week interval. Scans were measured by use of 3D CT reconstructions for length, width, and Hill-Sachs interval and with use of 2D CT for depth. The interclass correlation coefficient evaluated interobserver and intraobserver variability and percentage error, and Student t-tests assessed measurement accuracy. Results: Interclass correlation coefficient reliability demonstrated strong agreement for all variables measured (0.856-0.975). Percentage error between measured length and measured depth and the true measurement significantly varied with respect to both lesion depth ($P = .003$ and $P = .005$, respectively) and lesion size ($P = .049$ and $P = .004$, respectively). Discussion and conclusions: The 3D CT imaging is effective and reproducible in determining lesion size. Determination of Hill-Sachs interval width is also reliable when it is applied to the glenoid track concept. Measured values on 3D and 2-dimensional imaging using a conventional CT scanner may slightly underestimate true measurements.

Ippolito J, Colen R, Hassanzadeh C, Rao YJ, Ponisio M, Tsien C, **Chinnaiyan P** and Rubin J (2017). "Identification of a clinically-actionable sexual dimorphism in glioblastoma glycolysis." Neuro-Oncology 19(Sup 6): vi129-vi130.

[Full-Text](#)

Department of Radiation Oncology

Sex differences are present in tumor incidence and mortality. In many cancers including GBM, males not only have a higher incidence but also exhibit poorer outcomes. The molecular basis of this phenomenon has not yet been elucidated. Because of increased glucose utilization in normal male development and the inverse correlation between glioma glucose uptake and patient survival, we hypothesized that male GBM would have enhanced glycolysis relative to female GBM. First, biochemical measurements of clinical samples disclosed significant enrichment of glycolytic activity in male GBM measured by pyruvate kinase activity and lactate levels. Next, to determine if a specific compartment in the GBM microenvironment was driving these sex differences in glycolysis, we performed metabolic reconstructions using the IVY glioblastoma atlas. We discovered significant overexpression ($q < 0.01$, fold-change > 2) of several glycolytic genes unique to the peri-necrotic compartment suggesting that male GBM had higher necrosis than female GBM. An analysis of clinical MRI datasets confirmed that although males had significantly higher necrosis than females, females were uniquely stratified into "high" and "low" necrosis groups where "high necrosis" females did significantly worse. To address the possibility that glycolysis could stratify females similarly to necrosis, we analyzed glycolytic pathway TCGA RNA-Seq data from male and female primary GBM. Similarly, we discovered that expression of the glycolytic transcriptome more robustly stratified females than males. We cross validated these findings with a small cohort of GBM patients with suspected recurrence who were imaged with FDG-PET. In keeping with female-specific stratification, we discovered that FDG uptake at the suspected recurrence also risk-stratified females. In summary, although male GBM is characterized by higher glycolytic activity, glycolysis has the ability to uniquely risk-stratify female GBM. Together, our findings represent a previously uncharacterized phenomenon that pave the way toward a "sexbased workflow" for GBM

stratification employing integrated metabolism and imaging.

Jayaschandran V, Schuiteman E, Otoupalova E, Meka S, **Boura J, Christensen P and Dalal B** (2017). "Predicting mortality in ARDS." *Chest* 152(4): A234.

[Full-Text](#)

Department of Biomedical Sciences (BH)

Department of Internal Medicine

PURPOSE: Recent studies have examined ventilator associated variables associated with mortality in acute respiratory distress syndrome (ARDS). The APPS score uses Age, PaO₂/FiO₂ ratio, and Plateau pressure measured at 24 hours after diagnosis of ARDS. This 9-point scale classifies patients into low, moderate and high mortality risk groups. Alternatively, driving pressure calculated as tidal volume divided by respiratory system compliance (or by plateau pressure minus positive end expiratory pressure in patients not making spontaneous respiratory efforts) is an index of the functional size of the lung. Driving pressure is also correlated with mortality in ARDS. We applied these two systems to a retrospective cohort of patients with ARDS in our institution and correlated each to in-hospital, all-cause mortality. **METHODS:** A retrospective chart review was performed to identify patients with moderate and severe ARDS (according to the Berlin definition) managed in the medical and surgical ICUs of a tertiary care hospital over a 3-year period. APPS score was calculated for each patient. Driving pressure at 24 hours after the diagnosis of ARDS was calculated by subtracting positive end expiratory pressure from plateau pressure. Demographics, other patient-related and ventilator-related variables as well as mortality were also recorded. The association of both driving pressure and APPS score and in-hospital mortality was assessed by univariate and multivariate regression analysis. **RESULTS:** Sixty three patients met the entry criteria for analysis. All-cause, in-hospital mortality for the group was 44.4%. Both APPS score and driving pressure had significant association with mortality in univariate analysis. In the multivariate regression analysis, there was no significant association between APPS score and mortality. In contrast, driving pressure was correlated with all-cause mortality in the multivariate analysis (p=.005), with an area under curve (Receiver Operating Curve-ROC) of 0.73 (95% CI = 0.602 to 0.858). **CONCLUSIONS:** Moderate and severe ARDS have high mortality. In a retrospective analysis of ARDS patients at our institution, APPS score was not found to have significant association with in-hospital mortality. However, driving pressure at 24 hours predicts mortality with high specificity and sensitivity. Further prospective studies can clarify these results.

Kaur H, Muhleman M and **Balon HR** (2017). "Complex regional pain syndrome diagnosed with triple-phase bone scanning." *Journal of Nuclear Medicine Technology* 45(3): 243-244.

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Department of Diagnostic Radiology and Molecular Imaging

In this report, we present a case of complex regional pain syndrome in a 55-y-old woman in whom the diagnosis was made on the basis of the bone scan findings. We also discuss the typical and atypical scintigraphic presentations of this entity, including pathophysiology and management.

Kaur H, Muhleman M and **Balon HR** (2017). "Spleen uptake on a bone scan." *Journal of Nuclear Medicine Technology* 45(3): 245-246.

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Department of Diagnostic Radiology and Molecular Imaging

We present a patient with spleen uptake on bone scanning that was due to sickle cell disease. We also discuss other etiologies for this finding.

Kirsch JM, Bedi A, Horner N, **Wiater JM**, Pauzenberger L, Koueiter DM, Miller BS, Bhandari M and Khan M (2017). "Tranexamic acid in shoulder arthroplasty a systematic review and meta-analysis." *JBJS Reviews* 5(9): 11.

[Full-Text](#)

Department of Orthopedic Surgery

Background: The role of tranexamic acid (TXA) in reducing blood loss following primary shoulder arthroplasty has been demonstrated in small retrospective and controlled clinical trials. This study

comprehensively evaluates current literature on the efficacy of TXA to reduce perioperative blood loss and transfusion requirements following shoulder arthroplasty. Methods: PubMed, MEDLINE, CENTRAL, and Embase were searched from the database inception date through October 27, 2016, for all articles evaluating TXA in shoulder arthroplasty. Two reviewers independently screened articles for eligibility and extracted data for analysis. A methodological quality assessment was completed for all included studies, including assessment of the risk of bias and strength of evidence. The primary outcome was change in hemoglobin and the secondary outcomes were drain output, transfusion requirements, and complications. Pooled outcomes assessing changes in hemoglobin, drain output, and transfusion requirements were determined. Results: Five articles (n 5 629 patients), including 3 Level-I and 2 Level-III studies, were included. Pooled analysis demonstrated a significant reduction in hemoglobin change (mean difference [MD], 20.64 g/dL; 95% confidence interval [CI], 20.84 to 20.44 g/dL; p, 0.00001) and drain output (MD, 2116.80 mL; 95% CI, 2139.20 to 294.40 mL; p, 0.00001) with TXA compared with controls. TXA was associated with a point estimate of the treatment effect suggesting lower transfusion requirements (55% lower risk); however, the wide CI rendered this effect statistically nonsignificant (risk ratio, 0.45; 95% CI, 0.18 to 1.09; p 5 0.08). Findings were robust with sensitivity analysis of pooled outcomes from only Level-I studies. Conclusions: Moderate-strength evidence supports use of TXA for decreasing blood loss in primary shoulder arthroplasty. Further research is necessary to evaluate the efficacy of TXA in revision shoulder arthroplasty and to identify the optimal dosing and route of administration of TXA in shoulder arthroplasty.

Kokkinos P, Myers J, **Franklin B**, Narayan P, Lavie CJ and Faselis C (2017). "Cardiorespiratory fitness and health outcomes: A call to standardize fitness categories." [Mayo Clinic Proceedings](#). ePub Ahead of Print.

[Full-Text](#)

Department of Internal Medicine

An inverse association between physical activity or fitness status and health outcomes has been reported by several cohort studies. When fitness categories are established in quartiles or quintiles based on the peak exercise capacity achieved, the association is graded. Although significant health benefits of increased cardiorespiratory fitness (CRF) have been uniformly reported, the degree of protection has varied substantially between studies. This variability is likely due to varying methods used to define CRF categories, and not considering age, despite its strong effect on CRF. To ameliorate these methodological discrepancies, we propose standardized guidelines by which age-specific CRF categories should be defined. © 2017.

Landolfi E, **Fletcher C** and **Millward P** (2017). "Implementation of a system-wide platelet inventory report optimizes platelet utilization and reduces unit wastage." [Transfusion](#) 57(Sup 3): 252A.

[Request Form](#)

Department of Pathology

Lilly RJ, Koueiter DM, Graner KC, **Nowinski GP**, **Sadowski J** and **Grant KD** (2017). "Computer-assisted navigation for intramedullary nail fixation of intertrochanteric femur fractures: A randomized, controlled trial." [Injury](#). ePub Ahead of Print.

[Full-Text](#)

Department of Orthopedic Surgery

INTRODUCTION: Lag screw cutout is one of the most commonly reported complications following intramedullary nail fixation of intertrochanteric femur fractures. However, its occurrence can be minimized by a well-positioned implant, with a short Tip-to-Apex Distance (TAD). Computer-assisted navigation systems provide surgeons with the ability to track screw placement in real-time. This could allow for improved lag screw placement and potentially reduce radiation exposure to the patient and surgeon. **METHODS:** Between Oct 2014 and Jan 2016, patients with intertrochanteric femur fractures being treated with intramedullary nail fixation by one of three fellowship-trained orthopaedic traumatologists were enrolled. Inclusion criteria were low-energy mechanism of injury and fracture class 31-A1/A2. Open fractures and patients with multiple injuries to the lower extremity were excluded. Patients were randomly assigned to computer-assisted navigation or a conventional fluoroscopic technique for lag screw placement. The primary outcomes were TAD, measured by postoperative anteroposterior and lateral x-rays by an independent reviewer, and

radiation exposure measured in seconds of fluoroscopy time. Surgical time was also recorded. RESULTS: 50 patients were randomized, 26 to the computer-assisted navigation group and 24 to the control group. The mean manually-measured TAD in the computer-assisted navigation group was 14.1mm+/-3.2 and in the control group was 14.9mm+/-3.0 (p=0.394). There was no difference between groups in total radiation time (navigation: 58.8 s+/-23.6, control: 56.5 s+/-28.5, p=0.337) or radiation time during lag screw placement (navigation: 19.4 s+/-8.8, control: 18.8 s+/-8.0, p=0.522). The surgical time was significantly longer in the computer-assisted navigation group with a mean surgical time of 45.8min+/-9.8 compared to 38.4min+/-9.3 in the control group (p=0.009). CONCLUSIONS: Computer-assisted navigation consistently produced excellent TADs, however it was not significantly better than conventional methods when done by fellowship-trained orthopaedic traumatologists. Surgeons with a lower volume trauma practice could potentially benefit from computer-assisted navigation to obtain better TAD.

Liu Y, Xu Y, Zhang X, Shi Y, Wang C, **Zhang PL**, Liu Y, Nishijima DK, Lin AL, Weiss RE, Yagapen AN, Malveau SE, Adler DH, **Bastani A**, Baugh CW, Caterino JM, **Clark CL**, Diercks DB, Hollander JE, Nicks BA, Shah MN, Stiffler KA, Storrow AB, Wilber ST and Sun BC (2017). "ECG predictors of cardiac arrhythmias in older adults with syncope." *Cytopathology*. ePub Ahead of Print.

[Full-Text](#)

Department of Pathology

Department of Emergency Medicine

STUDY OBJECTIVE: Cardiac arrhythmia is a life-threatening condition in older adults who present to the emergency department (ED) with syncope. Previous work suggests the initial ED ECG can predict arrhythmia risk; however, specific ECG predictors have been variably specified. Our objective is to identify specific ECG abnormalities predictive of 30-day serious cardiac arrhythmias in older adults presenting to the ED with syncope. METHODS: We conducted a prospective, observational study at 11 EDs in adults aged 60 years or older who presented with syncope or near syncope. We excluded patients with a serious cardiac arrhythmia diagnosed during the ED evaluation from the primary analysis. The outcome was occurrence of 30-day serious cardiac arrhythmia. The exposure variables were predefined ECG abnormalities. Independent predictors were identified through multivariate logistic regression. The sensitivities and specificities of any predefined ECG abnormality and any ECG abnormality identified on adjusted analysis to predict 30-day serious cardiac arrhythmia were also calculated. RESULTS: After exclusion of 197 patients (5.5%; 95% confidence interval [CI] 4.7% to 6.2%) with serious cardiac arrhythmias in the ED, the study cohort included 3,416 patients. Of these, 104 patients (3.0%; 95% CI 2.5% to 3.7%) had a serious cardiac arrhythmia within 30 days from the index ED visit (median time to diagnosis 2 days [interquartile range 1 to 5 days]). The presence of nonsinus rhythm, multiple premature ventricular conduction, short PR interval, first-degree atrioventricular block, complete left bundle branch block, and Q wave/T wave/ST-segment abnormalities consistent with acute or chronic ischemia on the initial ED ECG increased the risk for a 30-day serious cardiac arrhythmia. This combination of ECG abnormalities had a similar sensitivity in predicting 30-day serious cardiac arrhythmia compared with any ECG abnormality (76.9% [95% CI 67.6% to 84.6%] versus 77.9% [95% CI 68.7% to 85.4%]) and was more specific (55.1% [95% CI 53.4% to 56.8%] versus 46.6% [95% CI 44.9% to 48.3%]). CONCLUSION: In older ED adults with syncope, approximately 3% receive a diagnosis of a serious cardiac arrhythmia not recognized on initial ED evaluation. The presence of specific abnormalities on the initial ED ECG increased the risk for 30-day serious cardiac arrhythmias.

Lurie K, Levy M, **Swor R** and Moore J (2017). "Cardiac costs: The economic impact of out-of-hospital cardiac arrest care." *JEMS: Journal of Emergency Medical Services* 42(12): 10-15.

[Request Form](#)

Department of Emergency Medicine

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 (2017). "Intravascular ultrasound and near-infrared spectroscopic features of coronary lesions with intraplaque haemorrhage." European Heart Journal-Cardiovascular Imaging 18(11): 1222-1228.

[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 (0.9mm [0.7, 1.1] vs. 1.7mm [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.

Mehta GU, Ding D, Patibandla MR, Kano H, Sisterson N, Su YH, Krsek M, Nabeel AM, El-Shehaby A, Kareem KA, Martinez-Moreno N, Mathieu D, McShane B, Blas K, Kondziolka D, **Grills I**, Lee JY, Martinez-Alvarez R, Reda WA, Liscak R, Lee CC, Lunsford LD, Vance ML and Sheehan JP (2017). "Stereotactic radiosurgery for cushing disease: Results of an international, multicenter study." Journal of Clinical Endocrinology and Metabolism 102(11): 4284-4291.

[Full-Text](#)

Department of Radiation Oncology

Context: Cushing disease (CD) due to adrenocorticotrophic hormone-secreting pituitary tumors can be a management challenge. **Objective:** To better understand the outcomes of stereotactic radiosurgery (SRS) for CD and define its role in management. **Design:** International, multicenter, retrospective cohort analysis. **Setting:** Ten medical centers participating in the International Gamma Knife Research Foundation. **Patients:** Patients with CD with >6 months endocrine follow-up. **Intervention:** SRS using Gamma Knife radiosurgery. **Main Outcome Measures:** The primary outcome was control of hypercortisolism (defined as normalization of free urinary cortisol). Radiologic response and adverse radiation effects (AREs) were recorded. **Results:** In total, 278 patients met inclusion criteria, with a mean follow-up of 5.6 years (0.5 to 20.5 years). Twenty-two patients received SRS as a primary treatment of CD. Mean margin dose was 23.7 Gy. Cumulative initial control of hypercortisolism was 80% at 10 years. Mean time to cortisol normalization was 14.5 months. Recurrences occurred in 18% with initial cortisol normalization. Overall, the rate of durable control of hypercortisolism was 64% at 10 years and 68% among patients who received SRS as a primary treatment. AREs included hypopituitarism (25%) and cranial neuropathy (3%). Visual deficits were related to treatment of tumor within the suprasellar cistern ($P = 0.01$), whereas both visual ($P, 0.0001$) and nonvisual cranial neuropathy ($P = 0.02$) were related to prior pituitary irradiation. **Conclusions:** SRS for CD is well tolerated and frequently results in control of hypercortisolism. However, recurrences can occur. SRS should be considered for patients with persistent hypercortisolism after pituitary surgery and as a primary treatment in those unfit for surgery. Long-term endocrine follow-up is essential after SRS.

Micale MA, Powers S, Embrey B, Williams J, Burroughs M and **Huang JZ** (2017). "Significant cytogenomic evolution identified by SNP chromosome microarray analysis accompanies plasmablastic transformation of a hyperdiploid plasma cell myeloma." Journal of Hematopathology 10(3-4): 133-140.

[Request Form](#)

Department of Pathology

Plasma cell myeloma (PCM) is a hematological malignancy involving clonal proliferation of plasma cells in bone marrow. It is the third most common hematolymphoid malignancy in the USA and primarily affects elderly people with a median onset age of 69 years and a survival duration ranging from a few months to more than 10 years. This variation is due largely to the fact that PCM is a genetically complex and heterogeneous disease. The tumor cells demonstrate a wide range of morphological features, from mature and recognizable plasma cells to pleomorphic forms. In a subset of cases, however, the tumor cells demonstrate plasmablastic morphology which predicts a poor prognosis. We present a patient with an initial diagnosis of plasma cell myeloma with typical morphology and a hyperdiploid karyotype predictive of a favorable outcome. The patient's disease was unresponsive to chemotherapy and evolved over the course of 43 months into a myeloma with plasmablastic features characterized by a highly complex abnormal karyotype demonstrating previously unidentified poor cytogenetic markers including CKS1B gene duplication and p53 gene deletion by fluorescence in situ hybridization (FISH). Post-mortem evaluation by single nucleotide polymorphism (SNP array) chromosome microarray analysis revealed additional structural abnormalities in the diagnostic specimen as well as significant genomic evolution in the plasmablastic myeloma.

Miller W, **Kachoria J** and **Zalesin K** (2017). "Factors associated with lean mass change following bariatric surgery." Surgery for Obesity and Related Diseases 13(10): S151-S152.

[Full-Text](#)

Department of Internal Medicine

OUIWB Medical Student Author

Background: Bariatric surgery results in significant weight loss and body composition changes, with reductions in both fat mass and lean mass. Minimizing lean mass loss during rapid weight loss has a beneficial impact on muscle strength, insulin sensitivity, and resting metabolic rate. We aimed to identify factors associated with lean mass change post-bariatric surgery. Methods: This retrospective study examined lean mass and fat mass changes via dual-energy x-ray absorptiometry (DXA) scans. Individuals that underwent gastric bypass or sleeve gastrectomy surgery at Beaumont Hospitals in 2013 and that completed two DXA scans, occurring before surgery and at 1-year post-surgery, were included in the study (N = 38). Factors assessed in relation to lean mass change included age, presence of type 2 diabetes, self-reported protein intake, self-reported regular exercise, serum pre-Albumin and serum glycosylated hemoglobin (HbA1c) levels at specified time intervals following surgery Results: At 1-year post-bariatric surgery, the mean percent total body weight loss was 28% 0.08% and mean percent lean mass loss was 16% 0.06%. On evaluation of lean mass loss relative to total weight loss, those in the highest age quartile had a greater relative lean mass loss than those in the lowest age quartile, with 45% versus 29% losses, respectively (p = 0.022). Individuals with type 2 diabetes approached having significantly greater relative lean mass loss than those without diabetes, with 36% and 27% losses, respectively (p = 0.053). A higher degree of self-reported regular exercise during weight loss approached a significant correlation with lower lean mass loss (r = 0.32, p = 0.054). There were no significant correlations between lean mass loss and self-reported protein intake, self-reported participation in regular exercise, or serum pre-Albumin and HbA1c levels. Conclusion: Older age was associated with greater lean mass loss at 1-year post-bariatric surgery. Structured modalities to attenuate post-bariatric surgery lean mass loss in older individuals, such as regular strength training during weight loss, may be reasonable. Some factors hypothesized to be associated with lean mass change, such as protein intake and regular exercise, were not significantly correlated. However, our small sample size has limited power to detect significant correlations. Larger studies identifying factors associated with lean mass change can help determine best practice guidelines for bariatric surgery patient care.

Mitra A and **Patel V** (2017). "Tissue plasminogen activator-induced angioedema in ischemic stroke patient." *Chest* 152(4): A4.

[Full-Text](#)

Department of Internal Medicine

INTRODUCTION: One of the well-known complications of tPA (tissue plasminogen activator) use in ischemic stroke patients is hemorrhagic conversion of infarct. A much less known and less documented complication of tPA is angioedema. Although it is rare, it can be life-threatening due to airway compromise. This case illustrates such a rare complication. **CASE PRESENTATION:** A 68 y/o female with history of chronic myeloid leukemia and hypertension presented to emergency department with right facial droop, arm weakness, and leg weakness for an hour. Upon presentation, her NIH stroke scale was 9 and she was rapidly evaluated by stroke team. CT scan of head showed no acute infarction or hemorrhage. She was given tPA per protocol. About 25 minutes after tPA administration, she developed upper lip and tongue swelling that progressed over five minutes. Due to throat tightening, she was intubated and treated with intravenous diphenhydramine and corticosteroids. Over the course of three days in the ICU she remained intubated and her upper airway swelling persisted, which precluded extubation and led to tracheostomy. Her orolingual swelling decreased over four to five days. **DISCUSSION:** Angioedema associated with tPA is a rare complication with an incidence of 1.3-5.1%. tPA exerts its antifibrinolytic action by activating plasminogen to plasmin, which leads to production of bradykinin, histamine, and activation of complement cascade (C3a and C5a). These changes eventually lead to angioedema. Another theory is autonomic dysfunction and vasomotor changes related to infarction of insular cortex. Orolingual angioedema associated with tPA typically occurs within two hours after administration and can present with airway compromise leading to intubation. ACE inhibitor use is a known risk factor which potentiates the development of angioedema. This is thought to be due to the relative increase in bradykinins, which are normally degraded by kininase II and ACE. **CONCLUSIONS:** When administering tPA for ischemic stroke patients should be monitored every fifteen minutes while tPA is infusing. tPA infusion should be stopped on earliest recognition of angioedema. While corticosteroids and diphenhydramine remain the mainstays of therapy, epinephrine may also be considered.

Moran MS, Zhao Y, Ma S, Kirova Y, Fourquet A, **Chen P**, Hoffman K, Hunt K, Wong J, Halasz LM, Freedman G, Prosnitz R, Yassa M, Nguyen DHA, Hijal T, Haffty BG, Wai ES and Truong PT (2017). "Association of radiotherapy boost for ductal carcinoma in situ with local control after whole-breast radiotherapy." *JAMA Oncol* 3(8): 1060-1068.

[Full-Text](#)

Department of Radiation Oncology

IMPORTANCE: The use of a radiotherapy (RT) boost to the tumor bed after whole-breast RT (WBRT) for ductal carcinoma in situ (DCIS) is largely extrapolated from invasive cancer data, but robust evidence specific to DCIS is lacking. **OBJECTIVE:** To compare ipsilateral breast tumor recurrence (IBTR) in women with DCIS treated with vs without the RT boost after breast-conserving surgery and WBRT. **DESIGN, SETTING, AND PARTICIPANTS:** This retrospective analysis pooled deidentified patient-level data from 10 academic institutions in the United States, Canada, and France from January 1, 1980, through December 31, 2010. All patients had newly diagnosed pure DCIS (no microinvasion), underwent breast-conserving surgery, and received WBRT with or without the boost with a minimum of 5 years of follow-up required for inclusion in the analysis. Given the limited events after WBRT, an a priori power analysis was conducted to estimate the DCIS sample size needed to detect the anticipated benefit of the boost. Data were uniformly recoded at the host institution and underwent primary and secondary reviews before analysis. Sample size calculations (ratio of patients who received the boost dose to those who did not, 2:1; $\alpha = .05$; power = 80%) estimated that 2982 cases were needed to detect a difference of at least 3%. The final analysis included 4131 patients (2661 in the boost group and 1470 in the no-boost group) with a median follow-up of 9 years and median boost dose of 14 Gy. Data were collected from July 2011 through February 2014 and analyzed from March 2014 through August 2015. **INTERVENTIONS:** Radiotherapy boost vs no boost. **MAIN OUTCOMES AND MEASURES:** Ipsilateral breast tumor recurrence. **RESULTS:** The analysis included 4131 patients (median [SD] age, 56.1 [10.9] years; range, 24-88 years). Patients with positive margins, unknown estrogen receptor status, and comedo necrosis were more likely to have received an RT boost. For the entire cohort, the boost was significantly associated with lower IBTR (hazard ratio [HR], 0.73; 95% CI, 0.57-0.94; P = .01) and with IBTR-free

survival (boost vs no-boost groups) of 97.1% (95% CI, 0.96-0.98) vs 96.3% (95% CI, 0.95-0.97) at 5 years, 94.1% (95% CI, 0.93-0.95) vs 92.5% (95% CI, 0.91-0.94) at 10 years, and 91.6% (95% CI, 0.90-0.93) vs 88.0% (95% CI, 0.85-0.91) at 15 years. On multivariable analysis accounting for confounding factors, the boost remained significantly associated with reduced IBTR (HR compared with no boost, 0.68; 95% CI, 0.50-0.91; P = .01) independent of age and tamoxifen citrate use. **CONCLUSIONS AND RELEVANCE:** This patient-level analysis suggests that the RT boost confers a statistically significant benefit in decreasing IBTR across all DCIS age groups, similar to that seen in patients with invasive breast cancer. These findings suggest that a DCIS RT boost to the tumor bed could be considered to provide an added incremental benefit in decreasing IBTR after a shared discussion between the patient and her radiation oncologist.

Nazneen W, Dogra S, Adam A and Mohammed A (2017). "Idiopathic pulmonary hemosiderosis presenting as anemia and respiratory failure in an adult." *Chest* 152(Sup 4): A748.

[Full-Text](#)

Department of Internal Medicine

INTRODUCTION: Idiopathic Pulmonary Hemosiderosis (IPH) is an extremely rare disease, which primarily occurs in children¹. Its usual presentation is associated with diffuse alveolar hemorrhage (DAH)². We describe a case of a 35-year-old patient who presented with recurrent acute hypoxemic respiratory failure requiring intubation and anemia requiring blood transfusions. Extensive workup confirmed diagnosis of DAH secondary to IPH. **CASE PRESENTATION:** A 35-year-old Caucasian female and active smoker presented with acute hypoxemic respiratory failure/ adult respiratory distress syndrome. The patient had similar presentations requiring intubation over the course of previous two years. Her etiology was thought to be secondary to an infectious process or smoking related interstitial lung disease and was responsive to steroid therapy. Autoimmune serology was unremarkable including a vasculitis panel. The patient was also anemic requiring blood transfusions but without hemoptysis. She underwent a bronchoscopy with bronchoalveolar lavage (BAL) and transbronchial biopsy which was consistent with DAH and hemosiderin laden macrophages. There was no evidence of vasculitis, capillaritis or infectious etiology. These findings were consistent with a diagnosis of IPH. She was started on IV Solumedrol and Imuran with excellent response to treatment. She remains stable without further respiratory compromise for the past 1 year. She is on maintenance prednisone and Imuran therapy. **DISCUSSION:** The etiology of IPH is unknown. It primarily presents in children and is rarely seen in adults¹. When in adults, presentation is usually with hemoptysis and bilateral alveolar infiltrates. Anemia and dyspnea without hemoptysis is the common presentation in children. The etiology may be immunological causing a defect in the basement membrane of the capillary, which may explain the responsiveness to corticosteroids and immunosuppressive therapies². Bronchoscopy with BAL showing hemosiderin-laden macrophages without any evidence of pulmonary vasculitis or capillaritis is diagnostic of the condition². Patients respond to steroids and immunosuppressive therapies. **CONCLUSIONS:** IPH should be considered in any patient that presents with recurrent respiratory failure, anemia and negative vasculitis workup.

Nguyen LN, Han E, Wilson A and **Gilleran JP** (2017). "Clinical factors to decide between sacral neuromodulation and onabotulinum toxin—when is one clearly better?" *Current Bladder Dysfunction Reports* 12(4): 328-336.

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Department of Urology

Purpose of Review: This article provides a review of the current literature on the applicability of each treatment for OAB, as well as unique clinical scenarios. In addition, the authors provide their own practical insight on how to approach third-line therapies for OAB. **Recent Findings:** The treatment of overactive bladder (OAB) is increasingly common amongst specialists. OnabotulinumtoxinA and sacral neuromodulation are both highly effective third-line therapies for OAB, but work via very different mechanisms. The differences between the two are associated with potential benefits and complications unique for each. **Summary:** The OAB clinician must account for several clinical and personal factors in counseling patients on options. © 2017, Springer Science+Business Media, LLC.

Nishijima DK, Lin AL, Weiss RE, Yagapen AN, Malveau SE, Adler DH, **Bastani A**, Baugh CW, Caterino JM, **Clark CL**, Diercks DB, Hollander JE, Nicks BA, Shah MN, Stiffler KA, Storrow AB, Wilber ST and Sun BC (2017). "ECG predictors of cardiac arrhythmias in older adults with syncope." Annals of Emergency Medicine. ePub Ahead of Print.

[Full-Text](#)

Department of Emergency Medicine

Study objective: Cardiac arrhythmia is a life-threatening condition in older adults who present to the emergency department (ED) with syncope. Previous work suggests the initial ED ECG can predict arrhythmia risk; however, specific ECG predictors have been variably specified. Our objective is to identify specific ECG abnormalities predictive of 30-day serious cardiac arrhythmias in older adults presenting to the ED with syncope. Methods: We conducted a prospective, observational study at 11 EDs in adults aged 60 years or older who presented with syncope or near syncope. We excluded patients with a serious cardiac arrhythmia diagnosed during the ED evaluation from the primary analysis. The outcome was occurrence of 30-day serious cardiac arrhythmia. The exposure variables were predefined ECG abnormalities. Independent predictors were identified through multivariate logistic regression. The sensitivities and specificities of any predefined ECG abnormality and any ECG abnormality identified on adjusted analysis to predict 30-day serious cardiac arrhythmia were also calculated. Results: After exclusion of 197 patients (5.5%; 95% confidence interval [CI] 4.7% to 6.2%) with serious cardiac arrhythmias in the ED, the study cohort included 3,416 patients. Of these, 104 patients (3.0%; 95% CI 2.5% to 3.7%) had a serious cardiac arrhythmia within 30 days from the index ED visit (median time to diagnosis 2 days [interquartile range 1 to 5 days]). The presence of nonsinus rhythm, multiple premature ventricular conduction, short PR interval, first-degree atrioventricular block, complete left bundle branch block, and Q wave/T wave/ST-segment abnormalities consistent with acute or chronic ischemia on the initial ED ECG increased the risk for a 30-day serious cardiac arrhythmia. This combination of ECG abnormalities had a similar sensitivity in predicting 30-day serious cardiac arrhythmia compared with any ECG abnormality (76.9% [95% CI 67.6% to 84.6%] versus 77.9% [95% CI 68.7% to 85.4%]) and was more specific (55.1% [95% CI 53.4% to 56.8%] versus 46.6% [95% CI 44.9% to 48.3%]). Conclusion: In older ED adults with syncope, approximately 3% receive a diagnosis of a serious cardiac arrhythmia not recognized on initial ED evaluation. The presence of specific abnormalities on the initial ED ECG increased the risk for 30-day serious cardiac arrhythmias.

Nudleman E and **Capone A** (2017). "Stage 5 retinopathy of prematurity," In Kychenthal B A and Dorta S P (ed). Retinopathy of Prematurity: Current Diagnosis and Management. Cham: Springer International Publishing. pp: 107-117.

[Full-Text](#)

Department of Ophthalmology

Stage 5 represents the most advanced stage of retinopathy of prematurity (ROP). Children present with a total retinal detachment, limited or no vision, and oftentimes with leukocoria due to the visibility of fibrous proliferation immediately posterior to the lens. As a result, the disease was first described with the term "retrolental fibroplasia" [1]. Since that time, we have learned a great deal about this blinding condition. Here we will review the pathogenesis, management, and prevention of stage 5 ROP.

Nudleman E, Muftuoglu IK, Gaber R, Robinson J, **Drenser K**, **Capone A** and **Trese MT** (2017). "Glaucoma after lens-sparing vitrectomy for advanced retinopathy of prematurity." Ophthalmology. ePub Ahead of Print.

[Full-Text](#)

Department of Ophthalmology

Purpose: To report the incidence of, and factors related to, glaucoma after lens-sparing vitrectomy (LSV) surgery in advanced retinopathy of prematurity (ROP). Design: Retrospective case series at a single tertiary referral pediatric vitreoretinal practice. Participants: Four hundred and one eyes from 270 patients were included. Methods: The medical records of patients who underwent LSV for stage 4A, 4B, and 5 ROP were retrospectively reviewed. Data were collected from patient charts including gender, gestational age at birth, birthweight, stage of ROP at presentation, prior treatment (laser or cryotherapy), subsequent retinal surgeries, presence of glaucoma, time to glaucoma (interval between LSV and the onset of glaucoma), date of lensectomy (if performed), and retinal attachment status at last visit. Lensectomy was considered as a

time-dependent covariate in the analysis. Main Outcome Measures: Incidence of glaucoma and potential risk factors for time to glaucoma. Results: Among 401 eyes with advanced ROP, 40 eyes (10.0%) had glaucoma during a mean of 3.06±4.11 years of follow-up. The incidence of glaucoma was 6.9% (17/247) in stage 4A, 12.0% (16/133) in stage 4B, and 33.3% (7/21) in stage 5 ROP. Twenty-one percent of eyes (87/401) required lensectomy at a mean of 1.23±2.19 years after LSV. In univariate analysis, having stage 5 ROP (vs. stage 4 ROP) and presence of lensectomy were found to be significantly associated with time to glaucoma (hazard ratio = 6.76, 95% confidence interval = 2.19-20.88, P = 0.001; hazard ratio = 3.06, 95% confidence interval = 1.56-6.0, P = 0.001, respectively). In multivariate analysis, lensectomy was the only significant independent factor associated with time to glaucoma (hazard ratio = 2.76, 95% confidence interval = 1.371-5.581, P = 0.004). Conclusions: Patients with more severe ROP had a higher incidence of glaucoma after lens-sparing vitrectomy. If a patient required lensectomy owing to progression of ROP and/or presence of lens opacity, then the hazard of having glaucoma significantly increased compared with those without lensectomy.

Orosey M, **Amin M** and **Cappell MS** (2017). "A 14-year study of 398 esophageal adenocarcinomas diagnosed among 156,256 EGDs performed at two large hospitals: An inlet patch is proposed as a significant risk factor for proximal esophageal adenocarcinoma." *Digestive Diseases and Sciences*: 1-14. ePub Ahead of Print.

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Department of Pathology

Department of Internal Medicine

Background: An association between inlet patches and proximal esophageal adenocarcinomas is currently suspected because of numerous case reports of simultaneous occurrence of both diseases. Aims: To analyze whether inlet patches are significantly associated with proximal esophageal adenocarcinomas in a large population. Methods: Computerized search of pathology and EGD reports revealed 398 cases of esophageal adenocarcinomas among 156,236 EGDs (performed on 106,510 patients) diagnosed by histopathology performed at Royal Oak/Troy, William Beaumont Hospitals, 2003–2016. Adenocarcinomas localized as distal, middle, or proximal; and characterized as associated versus unassociated with inlet patches. Medical records were reviewed. Endoscopic photographs, radiologic images, and pathologic slides were re-reviewed. Two researchers independently performed systematic computerized literature searches; cases of simultaneous diseases identified by consensus. Results: Adenocarcinoma locations included: distal-381, middle-14, and proximal esophagus-3. Five patients had inlet patches with esophageal adenocarcinomas located at: distal-2, middle-0, and proximal esophagus-3 (relative frequency of inlet patches with cancers of distal/middle esophagus = 2/395 [5%] vs. proximal esophagus = 3/3 [100%], $p < .000001$, 95% OR CI > 50.1, Fisher's exact test). Cases of proximal esophageal adenocarcinomas within inlet patches included: (1) Seventy-eight-year-old man presented with dysphagia. Neck CT showed proximal esophageal mass. EGD revealed semi-circumferential, multinodular, 3.0 × 1.5 cm mass within inlet patch. Histopathology of biopsies revealed moderately-to-poorly differentiated adenocarcinoma. Patient received chemoradiotherapy and expired 2 years later. (2) Seventy-nine-year-old man presented with anorexia and weight loss. EGD demonstrated proximal esophageal mass within inlet patch. Histopathology of biopsies revealed poorly differentiated, signet ring cell adenocarcinoma. Chest CT revealed 3.4 × 2.1-cm-proximal esophageal mass. Patient expired 4 months later. (3) Sixty-year-old man presented with dysphagia. EGD revealed 4-cm-long, semi-circumferential, proximal esophageal mass within inlet patch. Histopathology of biopsies revealed poorly differentiated adenocarcinoma. Patient underwent emergency esophagectomy for esophageal perforation 2 weeks after initiating chemoradiotherapy, and died shortly thereafter. Literature review revealed 39 cases of simultaneous disease. Study Limitations: Potential underreporting by endoscopists of inlet patches at EGD. Conclusions: Study supplements 39 previously reported cases of simultaneous disease, by adding three new cases, and by novel report of statistically significant association between these two entities, which has important implications in the pathophysiology of proximal esophageal adenocarcinoma. © 2017 Springer Science+Business Media, LLC, part of Springer Nature

Orosey M, Garg L, Agrawal S, Agarwal M, John JJ, **Haines DE** and **Wong WS** (2017). "Atrioesophageal fistula following radiofrequency catheter ablation of atrial fibrillation." Reviews in Cardiovascular Medicine 18(3): 115-122.

[Request Form](#)

Department of Internal Medicine

Atrioesophageal fistula (AEF) is a rare but catastrophic complication of catheter ablation of atrial fibrillation (AF), with an incidence of 0.03% to 1.5% per year. We report two cases and review the epidemiology, clinical features, pathogenesis, and management of AEF after AF ablation. The principal clinical features of AEF include fever, hematemesis, and neurologic deficits within 2 months after ablation. The close proximity of the esophagus to the posterior left atrial wall is considered responsible for esophageal injury during ablation and the eventual development of AEF. Prophylactic proton pump inhibitors, esophageal temperature monitoring, visualization of the esophagus during catheter ablation, esophageal protection devices, esophageal cooling, and avoidance of energy delivery in close proximity to the esophagus are some techniques to prevent esophageal injury. Eliminating esophageal injury during AF ablation is of utmost importance in preventing AEF. A high index of suspicion and early intervention are necessary to prevent fatal outcomes. Early surgical repair is the mainstay of treatment. (c) 2017 MedReviews (R), LLC

Perdoncin E, Seth M, Schreiber T, Khandelwal A, **Dixon S** and Gurm H (2017). "Contemporary use and outcomes associated with rotational versus orbital atherectomy in percutaneous coronary interventions: Insights from the Blue Cross Blue Shield of Michigan Cardiovascular Consortium (BMC2)." Journal of the American College of Cardiology 70(18): B251.

[Full-Text](#)

Department of Internal Medicine

BACKGROUND Atherectomy devices have been used with the goal of improving outcomes during percutaneous coronary intervention (PCI) of heavily calcified lesions. There is a paucity of contemporary data evaluating the safety and efficacy of orbital atherectomy versus rotational atherectomy in real world practice. **METHODS** We evaluated the outcomes of 1,641 patients who underwent PCI using either rotational atherectomy (RA) or orbital atherectomy (OA) from 2014-2016 at 33 hospitals in Michigan participating in the Blue Cross Blue Shield of Michigan Cardiovascular Consortium. **RESULTS** The rate of use of both strategies has increased since 2014, although over-all use remains low (1.6% RA vs. 1.1% OA). There was a higher rate of perforation with RA than with OA (1.8% vs. 0.4%, $p=0.021$), a higher rate of significant dissection (1.7% vs. 0.6%, $p=0.065$), and more bleeding events within 72 hours (7.4% vs. 4.2%, $p=0.014$). There was no significant difference in the rate of CABG (0.4% vs. 0.4%, $p=0.856$), death (2.6% vs. 1.9%, $p=0.407$), or myocardial infarction (5.5% vs. 4.8%, $p=0.587$) between RA versus OA, respectively. **CONCLUSION** Use of atherectomy during PCI remains low, but is steadily increasing. Orbital atherectomy as opposed to rotational atherectomy was associated with a slightly lower rate of complications including dissection, perforation, and bleeding but with no difference in death, MI, or CABG. Further study is needed to determine whether the observed difference in procedural outcomes is device or lesion related.

Peters KM (2017). "Percutaneous tibial nerve stimulation therapy for overactive bladder syndrome: Clinical effectiveness, urodynamic, and durability evaluation EDITORIAL COMMENT." Urology 2017(108): 57-58.

[Full-Text](#)

Department of Urology

Pierce LJ, Feng M, Griffith KA, Jagsi R, Boike T, Dryden D, **Gustafson GS**, Benedetti L, Matuszak MM, Nurushev TS, Haywood J, Radawski JD, Speers C, Walker EM, Hayman JA, Moran JM and Michigan Radiation O (2017). "Recent time trends and predictors of heart dose from breast radiation therapy in a large quality consortium of radiation oncology practices." International Journal of Radiation Oncology Biology Physics 99(5): 1154-1161.

[Full-Text](#)

Department of Radiation Oncology

Purpose: Limited data exist regarding the range of heart doses received in routine practice with radiation therapy (RT) for breast cancer in the United States today and the potential effect of the continual assessment of the cardiac dose on practice patterns. Methods and Materials: From 2012 to 2015, 4688 patients with

breast cancer treated with whole breast RT at 20 sites participating in a state-wide consortium were enrolled into a registry. The importance of limiting the cardiac dose has been emphasized in the consortium since 2012, and the mean heart dose (MHD) has been reported by each institution since 2014. The effects on the MHD were estimated for both conventional and accelerated fractionation using regression models, with technique (intensity modulated RT [IMRT] vs 3-dimensional conformal RT), deep inspiration breath hold use, patient position (supine vs prone), nodal RT (if delivered), and boost (yes vs no) as covariates. Results: For left-sided breast cancer treated with conventional fractionation, the median MHD in 2012 was 2.19 Gy versus 1.65 Gy in 2015 ($P < .001$). The factors that significantly increased the MHD for conventional fractionation were increased separation relative to 22 cm (1.5%/1 cm), supraclavicular or infraclavicular nodal RT (17.1%), internal mammary nodal RT (40.7%), use of a boost (20.9%), treatment year before 2015 (7.7%), and use of IMRT (20.8%). For left-sided BC treated with accelerated fractionation, the median MHD in 2012 was 1.70 Gy versus 1.22 Gy in 2015 ($P < .001$). The factors that significantly increased the MHD for accelerated fractionation were separation (1.7%/1 cm), use of a boost (20.0%), year before 2015 (8.5%), and use of IMRT (19.2%). The factors for both conventional fractionation and accelerated fractionation that significantly reduced the MHD were the use of deep inspiration breath hold and prone positioning. Conclusions: The MHD for left-sided breast cancer decreased during a recent 4-year period, coincident with an increased focus on cardiac sparing in the radiation oncology community in general and a state-wide consortium specifically. These data suggest a positive effect of systematically monitoring the heart dose delivered. (C) 2017 Elsevier Inc. All rights reserved.

Pressman A, **Sawyer KN, Devlin W and Swor R** (2017). "Association between percutaneous hemodynamic support device and survival from cardiac arrest in the state of Michigan." *American Journal of Emergency Medicine*: 1-4. ePub Ahead of Print.

[Full-Text](#)

Department of Emergency Medicine

Department of Internal Medicine

Introduction: The role of circulatory support in the post-cardiac arrest period remains controversial. Our objective was to investigate the association between treatment with a percutaneous hemodynamic support device and outcome after admission for cardiac arrest. Methods: We performed a retrospective study of adult patients with admission diagnosis of cardiac arrest or ventricular fibrillation (VF) from the Michigan Inpatient Database, treated between July 1, 2010, and June 30, 2013. Patient demographics, clinical characteristics, treatments, and disposition were electronically abstracted based on ICD-9 codes at the hospital level. Mixed-effects logistic regression models were fit to test the effect of percutaneous hemodynamic support device defined as either percutaneous left ventricular assist device (pLVAD) or intra-aortic balloon pump (IABP) on survival. These models controlled for age, sex, VF, myocardial infarction (MI), and cardiogenic shock with hospital modeled as a random effect. Results: A total of 103 hospitals contributed 4393 patients for analysis, predominately male (58.8%) with a mean age of 64.1 years (SD 15.5). On univariate analysis, younger age, male sex, VF as the initial rhythm, acute MI, percutaneous coronary intervention, percutaneous hemodynamic support device, and absence of cardiogenic shock were associated with survival to discharge (each $p < .001$). Mixed-effects logistic regressions revealed use of percutaneous hemodynamic support device was significantly associated with survival among all patients (OR 1.8 (1.28-2.54)), and especially in those with acute MI (OR 1.95 (1.31-2.93)) or cardiogenic shock (OR 1.96 (1.29-2.98)). Conclusion: Treatment with percutaneous hemodynamic support device in the post-arrest period may provide left ventricular support and improve outcome. © 2017 Elsevier Inc.

Qafiti F, Kaur S and Bahado-Singh R (2017). "Development of a clinical risk assessment tool for 6-week postpartum visit nonadherence." *American Journal of Perinatology*. ePub Ahead of Print.

[Request Form](#)

OUIWB Medical Student Author

Department of Obstetrics and Gynecology

Objective The 6-week postpartum visit (6WPP) is integral in addressing postpartum medical concerns. Failure to attend this routine visit is a measure of suboptimal care. This study aims to identify patients at risk of

6WPP nonadherence by developing a novel point-based risk scoring system. Methods In this retrospective case-control study (n = 587), a randomly selected subgroup, that is, the "test" group (n = 303), was used to develop the model. The remaining patients were used as an independent "validation" group (n = 284) to assess the model performance. Results Five factors were found to correlate with 6WPP nonadherence. Positive correlations include: Medicaid health insurance (odds ratio [OR]: 2.40, 95% confidence interval [CI]: 1.38–4.15); prenatal care initiated at ≥ 14 weeks' gestation (OR: 1.82, 95% CI: 1.11–2.96); and maternal age < 24.0 years (OR: 2.02, 95% CI: 1.13–3.61). Factors negatively correlated with nonadherence include: "married" marital status (OR: 0.50, 95% CI: 0.30–0.84) and primiparity (OR: 0.51, 95% CI: 0.30–0.85). The final scoring system demonstrates significant predictive power in both the test and validation groups (respectively, area under the curve = 0.682, $p < 0.001$ and 0.629, $p < 0.001$). Conclusion This risk assessment tool relies on routinely collected data, making its implementation simple. Applying it in the clinical setting allows for early, targeted intervention aimed at minimizing 6WPP nonadherence.

Rabbat MG, Berman DS, Kern M, **Raff G, Chinnaiyan K**, Koweek L, Shaw LJ, Blanke P, Scherer M, Jensen JM, Lesser J, Norgaard BL, Pontone G, De Bruyne B, Bax JJ and Leipsic J (2017). "Interpreting results of coronary computed tomography angiography-derived fractional flow reserve in clinical practice." Journal of Cardiovascular Computed Tomography 11(5): 383-388.

[Full-Text](#)

Department of Internal Medicine

The application of computational fluid dynamics to coronary computed tomography angiography allows Fractional Flow Reserve (FFR) to be calculated non-invasively (FFRCT), enabling computation of FFR from coronary computed tomography angiography acquired at rest both for individual lesions as well as along the entire course of a coronary artery. FFRCT, validated in a number of accuracy studies and a large clinical utility trial, is beginning to penetrate clinical practice. Importantly, while accuracy trials compared FFRCT to invasively measured FFR at a single point in the coronary tree, clinical reports of FFRCT provide information regarding a patient's entire coronary vasculature. Specifically, in distal coronary segments, calculated FFRCT values may be low and below 0.80 even in the absence of localized stenoses within the course of the artery. As a result, the reporting physician needs to understand how to interpret the findings in a clinically useful and thoughtful fashion. This review provides a brief overview of the background of both invasively measured and computationally derived FFR, explains changes in FFR along the course of normal coronary arteries and those affected by coronary atherosclerosis, and outlines the relevance of measurement location when interpreting and reporting FFR and FFRCT results. Published by Elsevier Inc. on behalf of Society of Cardiovascular Computed Tomography.

Rao P, Yonekawa Y, Abbey AM, Shah AA, **Wolfe JD** and **Faia LJ** (2017). "Prevalence and surgical outcomes of macular hole in eyes with age-related macular degeneration." Ophthalmology Retina 1(2): 158-164.

[Request Form](#)

Department of Ophthalmology

Purpose To report the prevalence and surgical outcomes of macular holes (MHs) in eyes with age-related macular degeneration (AMD). Design Interventional, retrospective, consecutive case series. Participants Patients with MH and concurrent non-neovascular (NNV) or neovascular (NV) AMD. Methods The records of 27 912 patients diagnosed with AMD between 2009 and 2014 at Associated Retinal Consultants were reviewed. Demographic data, visual acuity (VA), funduscopic examination, and optical coherence tomography were reviewed in those with a concurrent diagnosis of MH. Main Outcome Measures The VA and MH closure status. Results A total of 15 196 patients with NNV and 12 716 patients with NV AMD were identified. A total of 199 eyes (0.7%) had MHs (160 NNV [1.1%]; 39 NV [0.3%]). Mean time to diagnosis of MH after the initial visit was 11.2 months (7.1 NNV; 24.8 NV). A total of 127 eyes underwent surgical repair (106 NNV; 21 NV). The final closure rate in those who underwent vitrectomy was 89.8% (91.5% NNV; 81.0% NV) and 25.0% in those who were observed (18.5% NNV, $P < 0.0001$; 44.4% NV, $P = 0.02$). Preoperative logarithm of the minimum angle of resolution VAs in NNV and NV AMD was 0.8 ± 0.4 and 0.8 ± 0.5 , respectively, and final VA was 0.6 ± 0.5 ($P < 0.001$) and 0.9 ± 0.6 ($P = 0.52$), respectively. Mean follow-up time was 5.0 years. Conclusions The prevalence of MH was higher in eyes with NNV AMD than in those with NV

AMD. The surgical closure rate was comparable in both groups, but VA improvement reached statistical significance only in the NNV AMD group.

Raslan R, El Sayegh S, Chams S, Chams N, Leone A and **Hajj Hussein I** (2017). "Re-emerging vaccine-preventable diseases in war-affected peoples of the eastern mediterranean region-an update." Front Public Health 5(Oct): 1-8.
[Full-Text](#)

Department of Biomedical Sciences (OU)

For the past few decades, the Eastern Mediterranean Region has been one area of the world profoundly shaped by war and political instability. On-going conflict and destruction have left the region struggling with innumerable health concerns that have claimed the lives of many. Wars, and the chaos they leave behind, often provide the optimal conditions for the growth and re-emergence of communicable diseases. In this article, we highlight a few of the major re-emerging vaccine preventable diseases in four countries of the Eastern Mediterranean Region that are currently affected by war leading to a migration crisis: Iraq, South Sudan, Syria, and Yemen. We will also describe the impact these infections have had on patients, societies, and national health care services. This article also describes the efforts, both local and international, which have been made to address these crises, as well as future endeavors that can be done to contain and control further devastation left by these diseases.

Safian RD (2017). "CO2 angiography: Colorless, odorless, but definitely not useless!" Catheterization and Cardiovascular Interventions 90(3): 449-450.

[Full-Text](#)

Department of Internal Medicine

Sahebjam S, Forsyth P, Arrington J, Jaglal M, Tran ND, Etame AB, Wicklund M, Drury-Sibiga A, Long W, Evernden B, Gatewood T, Macaulay R, **Chinnaiyan P** and Yu M (2017). "A phase I trial of hypofractionated stereotactic irradiation (HFSRT) with pembrolizumab and bevacizumab in patients with recurrent high grade glioma (nct02313272)." Neuro-Oncology 19(Sup 6): vi30.

[Full-Text](#)

Department of Radiation Oncology

BACKGROUND: There is strong pre-clinical evidence for the combination of PD-1 blockade with radiotherapy and anti-VEGF therapy. Herein, we present safety and efficacy data from a phase 1 study combining pembrolizumab, an anti-PD-1 monoclonal antibody, with hypofractionated stereotactic irradiation (HFSRT) and bevacizumab in recurrent high grade glioma. **METHODS:** This phase I study (3 + 3 design) explored the safety, tolerability, recommended phase II dose (RP2D), and antitumor activity of pembrolizumab administered concurrently with HFSRT and bevacizumab. Adult patients with recurrent glioblastoma or anaplastic astrocytoma (maximum diameter of target lesion ≤ 3.5 cm) were eligible. Eligible patients received HFSRT to the recurrent tumor (30 Gy in 5 fractions) combined with bevacizumab (10 mg/kg, Q2W) and pembrolizumab (100 mg or 200 mg intravenously based on dose level, Q3W). Two dose levels of pembrolizumab were explored and 20 patients were treated at RPD2. Treatment continued until disease progression or unacceptable toxicity. **RESULTS:** Twenty three patients with recurrent glioblastoma have been treated on this study (3 patients at 100 mg and 20 patients at 200 mg dose levels). Five patients had previous tumor progression on bevacizumab. Combination of HFSRT with pembrolizumab (200 mg every 3 weeks) and bevacizumab was generally well tolerated. The most common toxicities were grade 1 fatigue and grade 1 proteinuria. No treatment-related neurologic adverse events were observed. In 1 patient, study treatment was discontinued due to grade 3 elevation of liver transaminases. Durable objective responses (complete response + partial response ≥ 6 months) were observed in 53% of patients. The overall survival rate (at the time of abstract submission) at 6 and 12 months were 94% (16 out of 17 patients) and 64% (7 out of 11 patients), respectively. **CONCLUSION:** Combination of HFSRT with pembrolizumab (200 mg every 3 weeks) and bevacizumab is safe. Clinical activity of this combination therapy is encouraging.

Sandler KA, Cook RR, Ciezki JP, Shaikh T, Stock RG, Merrick GS, Demanes DJ, Spratt DE, Abu-Isa EI, Wedde T, Lilleby W, **Krauss DJ**, Song D, Alam R, Reddy CA, Nickols N, Steinberg ML, Horwitz EM, King CR and Kishan AU (2017). "Clinical outcomes for patients with gleason score 10 prostate adenocarcinoma: Results from a multi-institutional consortium study." International Journal of Radiation Oncology Biology Physics 99(2): S132-S133.

[Full-Text](#)

Department of Radiation Oncology

Schaefer JK, Sood SL, Haymart B, Gu X, Kong X, Kline-Rogers E, **Almany S**, Kozlowski J, Krol GD, Kaatz S, Froehlich JB and Barnes GD (2017). "Sociodemographic factors in patients continuing warfarin vs those transitioning to direct oral anticoagulants." Blood Advances 1(26): 2536-2540.

[Full-Text](#)

Department of Internal Medicine

Clinical factors and patient preferences are important for selecting oral anticoagulants for venous thromboembolism (VTE) and atrial fibrillation (AF). The relative association of sociodemographic factors with anticoagulant use is unknown. We evaluated a prospective cohort to compare sociodemographic variables in patients who continued on warfarin for AF or VTE to those who transitioned to 1 of the direct oral anticoagulants (DOACs). Adult patients, newly started on warfarin, were enrolled through 6 anticoagulation clinics across Michigan. Of 8468 patients, 53.3% had AF, 45.6% had VTE, and 1.1% had both. Of these, 696 (8.2%) switched from warfarin to a DOAC. There were no significant differences between switchers and nonswitchers for percentage of time with a therapeutic international normalized ratio on warfarin, urban-rural residence status, or health insurance. Switchers were more often white (83.3% vs 77.7%; $P < .001$), partnered (67.3% vs 59.2%; $P < .001$), or resided in a zip code with a higher median household income ($P < .001$). The results show that sociodemographic factors, such as race, partnered status, and income are associated with a patient's likelihood of switching to a DOAC vs remaining on warfarin therapy. Although clinical factors predominate, the reason for, and impact of, these observed variations in care requires further investigation.

Schneider M and **Levasseur K** (2017). "Images in emergency medicine." Annals of Emergency Medicine 69(5): 576.

[Full-Text](#)

Department of Emergency Medicine

Shah AR, Yonekawa Y, Todorich B, Van Laere L, Hussain R, Woodward MA, Abbey AM and **Wolfe JD** (2017). "Prediction of anti-VEGF response in diabetic macular edema after 1 injection." Journal of Vitreoretinal Diseases 1(3): 169-174.

[Full-Text](#)

Department of Ophthalmology

Purpose: With multiple anti-vascular endothelial growth factor and steroid therapies available for diabetic macular edema (DME), there is a need for early determination of the best treatment for a particular patient to prevent irreversible vision loss from chronic DME. In this study, we classify patients as responders or non-responders to anti-vascular endothelial growth factor (VEGF) monotherapy in the treatment of DME after a single anti-VEGF injection. Methods: The study was designed as a single center, retrospective, interventional case series. We included patients who received 3 consecutive monthly injections with the same anti-VEGF agent. We excluded patients who were treated for DME in the preceding 3 months with any form of anti-VEGF therapy. Visual acuity and central retinal thickness (CRT) data were followed for one year. Receiver operating characteristic (ROC) curve analysis was performed in order to identify cutoff values for identifying responders. Results: 107 eyes were reviewed, with 40 eyes of 34 patients meeting all inclusion criteria. Based on ROC curve analysis, a reduction in CRT by $> 15\%$ at 1-month, identified eyes that responded to treatment and had a $> 25\%$ reduction in CRT at 3-months (sensitivity 0.75, specificity 0.92). Conclusion: DME eyes that have early response to anti-VEGF treatment by reduction in CRT will have significant response to treatment by 3 months.

Shields EJW, Koueiter DM, Maerz T, **Schwark A** and **Wiater JM** (2017). "Previous rotator cuff repair is associated with inferior clinical outcomes after reverse total shoulder arthroplasty." *Orthopaedic Journal of Sports Medicine* 5(10): 6.

[Full-Text](#)

OUWB Medical Student Author

Department of Orthopedic Surgery

Background: Although recent evidence suggests that any prior shoulder surgery may cause inferior shoulder arthroplasty outcomes, there is no consensus on whether previous rotator cuff repair (RCR) is associated with inferior outcomes after reverse total shoulder arthroplasty (RTSA). Purpose: To retrospectively compare outcomes in patients who underwent RTSA with and without previous RCR. Study Design: Cohort study; Level of evidence, 3. Methods: Patients with prior RCR and those without previous shoulder surgery (control) who underwent RTSA for cuff tear arthropathy or irreparable cuff tear were retrospectively identified from a prospective database. Exclusion criteria included revision arthroplasty, fractures, rheumatoid arthritis, dislocations, infection, prior non-RCR procedures, less than 12 months of follow-up, and latissimus dorsi tendon transfer. The American Shoulder and Elbow Surgeons (ASES) score, ASES Activities of Daily Living (ADL) score, visual analog scale (VAS) score for pain, Subjective Shoulder Value (SSV), and range of motion (ROM) were compared between groups. Results: Patients with previous RCR (n = 83 shoulders) were younger (mean ± SD, 67 ± 10 vs 72 ± 8 years; P <.001) and more likely to be male (46% vs 32%, P =.033) than controls (n = 189 shoulders). No differences were found in follow-up duration (25 ± 13 vs 26 ± 13 months, P =.734), body mass index, or any preoperative outcome variable or ROM measure. At final follow-up, patients with previous RCR had significantly lower ASES (76.5 [95% CI, 71.2-81.7] vs 85.0 [82.6-87.5], P =.015), lower SSV (76 [72-81] vs 86 [83-88], P <.001), worse pain (2.0 [1.4-2.6] vs 0.9 [0.6-1.1], P <.001), and less improvement in the ASES, ASES ADL, VAS, SSV, and forward elevation measures than controls. Multivariable linear regression analysis demonstrated that previous RCR was significantly associated with lower postoperative ASES score (B = -9.5, P <.001), lower ASES improvement (B = -7.9, P =.012), worse postoperative pain (B = 0.9, P =.001), worse improvement in pain (B = -1.0, P =.011), lower postoperative SSV (B = -9.2, P <.001), lower SSV improvement (B = -11.1, P =.003), and lower forward elevation ROM improvement (B = -12.7, P =.008). Conclusion: Patients with previous RCR attempts may experience fewer short-term gains in functional and subjective outcome scores after RTSA compared with patients with no history of shoulder surgery who undergo RTSA. However, the differences between groups were small and below the minimal clinically important differences for the outcome measures analyzed.

Shore BJ, Miller PE, **Zaltz I**, Schoenecker PL and Sankar WN (2017). "Determining hinge abduction in Legg-Calve-Perthes disease: Can we reliably make the diagnosis?" *Journal of Pediatric Orthopedics*. ePub Ahead of Print.

[Full-Text](#)

Department of Orthopedic Surgery

BACKGROUND: Although hinge abduction is recognized as an important finding in children with Legg-Calve-Perthes disease, variable diagnostic criteria exist. The purpose of this study was (1) to test the interobserver and intraobserver agreement of the current definition of hinge abduction and (2) to develop consensus regarding key diagnostic features that could be used to improve our diagnostic criteria. METHODS: Four orthopaedic surgeons with subspecialty pediatric hip interest independently assessed 30 randomly ordered cases of Legg-Calve-Perthes disease. Each case included 2 fluoroscopic images of hip arthrograms (anteroposterior and abduction views). Surgeons graded the cases in a binary manner (hinge/no-hinge) on 2 separate occasions separated by a 4-week interval. Following reliability testing and comprehensive review of the literature, consensus-building sessions were conducted to identify key diagnostic features. Surgeons then regraded a new series of cases. Interobserver and intraobserver agreement between first/second and third/fourth readings were assessed using the Fleiss kappa. RESULTS: Interobserver kappa for hinge abduction between the first and second surveys was 0.52 (with 0.41 to 0.60 considered moderate agreement), compared with 0.56 for the third and fourth surveys. First and second reading intraobserver agreement ranged from 0.59 to 0.83 compared with 0.75 to 1.00 for third and fourth reading. Consensus sessions identified several key diagnostic factors including: adequate visualization of the labral contour and ability of the lateral epiphysis to slip below the chondrolabral complex in abduction. Medial dye pooling, often due to asphericity of the femoral head, was not found to be a useful diagnostic criterion.

CONCLUSIONS: Despite a combined experience of over 70 years among the reviewers, we found just slightly better than 50:50 agreement in what constitutes hinge abduction. Consensus discussions did improve our agreement but these modest changes emphasize how difficult it is to develop reliable diagnostic criteria for hinge abduction. As a result, we caution against using hinge abduction as an inclusion criteria or outcome measure for research purposes, as the diagnostic agreement can be inconsistent. LEVEL OF EVIDENCE: Level III-diagnostic study.

Siljander MP, **Baker EA, Baker KC**, Salisbury MR, Thor CC and **Verner JJ** (2017). "Fretting and corrosion damage in retrieved metal-on-polyethylene modular total hip arthroplasty systems: What is the importance of femoral head size?" *Journal of Arthroplasty*. ePub Ahead of Print.

[Full-Text](#)

Department of Orthopedic Surgery

Background: Fretting and corrosion at the modular femoral head-femoral neck (taper) interface have been reported in retrieved total hip arthroplasty (THA) prostheses. This study investigated associations among implant design, radiographic factors, and patient factors with corrosion and fretting at the taper interface in retrieved metal-on-polyethylene modular THA prostheses. Methods: Ninety-two retrieved primary metal-on-polyethylene THA implants were evaluated and graded for fretting, corrosion, and damage at the taper interface, including the femoral stem trunnion and femoral head. Preoperative radiographs were assessed for osteolysis and femoral stem alignment; and medical records were reviewed for demographic data. Results: Male patients had greater head corrosion ($P = .037$), patient age at revision had a weak, negative correlation with trunnion corrosion ($\rho = -0.20$, $P = .04$), and both body mass index and duration of implantation had weak, positive correlations with head fretting ($\rho = 0.26$, $P = .01$ and $\rho = 0.33$, $P = .001$, respectively). A weak, negative correlation was found between femoral head size and both head fretting and head corrosion ($\rho = -0.26$, $P = .007$ and $\rho = -0.21$, $P = .028$, respectively), and a weak, positive correlation was found between head offset and trunnion fretting ($\rho = 0.23$, $P = .030$). Varus femoral stem alignment was associated with greater head fretting ($P = .038$). Conclusion: Larger femoral head sizes were correlated with less severe head corrosion and head fretting, with 28-mm heads exhibiting more moderate-to-severe damage. Other factors, such as head-taper engagement and geometry, rather than head size, may affect rates of corrosion and fretting damage at the taper interface.

Sirls ER, **Killinger KA, Boura JA** and **Peters KM** (2017). "Percutaneous tibial nerve stimulation in the office setting: Real world experience of over 100 patients." *Urology*. ePub Ahead of Print.

[Full-Text](#)

Department of Urology

Department of Biomedical Sciences (BH)

OBJECTIVE: To examine the outcomes and compliance with percutaneous tibial nerve stimulation (PTNS) for overactive bladder symptoms (OAB). METHODS: Adults that had PTNS from 6/30/2011 to 10/8/2015 were retrospectively reviewed for demographics, co-pay, travel distance, employment status, history, symptoms, and treatments used before, during and after PTNS. Pearson's Chi-square, Fisher's exact, Wilcoxon rank and paired t tests were performed. RESULTS: Of 113 patients (mean age 75 +/- 12 years), most were women (65.5%), married (78.1%), and retired/unemployed (80.2%). Median distance to the clinic was 8.1 miles, and the median co-pay was \$0. The most common indication for PTNS was nocturia (92.9%) followed by OAB with urgency urinary incontinence (75.2%), and urinary urgency/frequency (24.8%). Prior treatments included anticholinergics (75.2%), mirabegron (36.6%), behavioral modification (29.2%), pelvic floor physical therapy (18.6%) and others (19.5%). Patients completed a mean of 10.5 +/- 3 of 12 planned weekly PTNS treatments. 40/105 (38.1%) used concomitant treatments (most commonly anticholinergics). 62/87 (71.3%) patients were improved at 6 weeks and 60/85 (70.6%) were improved at 12 weeks.. The majority (82; 75.6%) completed all 12 weekly treatments and 45 (54.9%) completed 3 (median) monthly maintenance treatments. The most common reason for non-compliance was lack of efficacy. Visit co-pay, employment status, and distance to clinic were not associated with failure to complete weekly treatments or progressing to monthly maintenance. CONCLUSIONS: Although most patients improved after weekly PTNS, non-adherence to maintenance and lack of efficacy may limit long term feasibility. Co-pay and distance traveled were not

associated with non-compliance.

Smith CP and **Chancellor MB** (2017). "Botulinum toxin endoscopic injection for pelvic pain," In Moldwin RM (ed). Urological and Gynaecological Chronic Pelvic Pain: Current Therapies. Cham: Springer International Publishing. pp: 325-337.

[Full-Text](#)

Department of Urology

Botulinum toxin (BoNT) has demonstrated effectiveness in the treatment of several pain disorders, including focal dystonia, cervical dystonia/spastic torticollis, spasmodic dysphonia, oromandibular dystonia, temporomandibular disorder, refractory myofascial pain syndrome, tension, and migraine-type headache (Smith et al., Clin J Pain 18(6 Suppl):S147-54, 2002). These positive results of BoNT helping pain have stimulated interest on the use of BoNT for a variety of genitourinary pain conditions.

Sobh AH, **Brown L** and **Moore DD** (2017). "Intramuscular hemangioma after total hip arthroplasty: An iatrogenic etiology." Arthroplasty Today. ePub Ahead of Print.

[Full-Text](#)

Department of Orthopedic Surgery

Soft-tissue hemangioma is a common benign tumor that can develop cutaneously, subcutaneously, or intramuscularly. Hemangioma formation within a muscular compartment is most often developmental in etiology; however, some cases are known to occur after blunt trauma to the soft tissues. To our knowledge, no cases of hemangioma formation after joint arthroplasty have been reported. We present a case of intramuscular hemangioma development within the hip abductor musculature after total hip arthroplasty via an anterolateral approach. Aside from developing congenitally or posttraumatically, hemangiomas may form after surgical dissection and must be considered as a source of anomalous swelling after surgery.

Song C, Sukul D, Seth M, Dupree JM, Khandelwal A, **Dixon SR**, Wohns D, LaLonde T and Gurm HS (2017). "Ninety-day readmission and long-term mortality in medicare patients (>= 65 Years) treated with ticagrelor versus prasugrel after percutaneous coronary intervention (from the Blue Cross Blue Shield of Michigan Cardiovascular Consortium)." American Journal of Cardiology 120(11): 1926-1932.

[Full-Text](#)

Department of Internal Medicine

Ticagrelor and prasugrel were found to be superior to clopidogrel for the treatment of acute coronary syndrome (ACS) after percutaneous coronary intervention (PCI); however, the comparative effectiveness of these 2 drugs remains unknown. We compared postdischarge outcomes among older patients treated with ticagrelor versus prasugrel after PCI for ACS. We linked clinical data from PCIs performed in older patients (age >= 65) for ACS at 47 Michigan hospitals to Medicare fee-for-service claims from January 1, 2013, to December 31, 2014, to ascertain rates of 90-day readmission and long-term mortality. We used propensity score matching to adjust for the nonrandom use of ticagrelor and prasugrel at discharge. Logistic regression and Cox proportional hazards models were used to compare rates of 90-day readmission and long-term mortality, respectively. Patients discharged on ticagrelor (n = 1,243) were more frequently older, female, had a history of cerebrovascular disease, and presented with ST- or non-ST-elevation myocardial infarction compared with prasugrel (n = 1,014). After matching (n = 756 per group), there were no significant differences in the rates of 90-day readmission (16.7% ticagrelor vs 14.6% prasugrel; adjusted odds ratio 1.15, 95% confidence interval 0.86 to 1.55, p = 0.35) or 1-year mortality (5.4% ticagrelor vs 3.7% prasugrel; hazard ratio 1.3, 95% confidence interval 0.8 to 2.2, p = 0.31). In conclusion, we found no significant differences in the rates of 90-day readmission or longterm mortality between older patients treated with ticagrelor and patients treated with prasugrel after PCI for ACS. In the absence of randomized data to the contrary, these 2 treatments appear similarly effective. (C) 2017 Elsevier Inc. All rights reserved.

Stem MS, Todorich B, Woodward MA, Hsu J and **Wolfe JD** (2017). "Scleral-fixated intraocular lenses: Past and present." Journal of Vitreoretinal Diseases 1(2): 144-152.

[Full-Text](#)

Department of Ophthalmology

Intraocular lenses (IOLs) can have inadequate support for placement in the capsular bag as a result of ocular trauma, metabolic or inherited conditions such as Marfan's syndrome or pseudoexfoliation, or complicated cataract surgery. Surgical options for patients with inadequate capsular support include alternative placement in the anterior chamber (ACIOLs), fixation to the iris, or fixation to the sclera. The surgical techniques for each of these approaches have improved considerably over the last several decades resulting in improved visual and ocular outcomes. If no capsular or iris support exists, the surgeon can fixate an IOL to the sclera or the patient can remain aphakic. IOLs can be fixated to the sclera using sutures or by tunneling the IOL haptics into the sclera without sutures. This review summarizes the pre-operative considerations, surgical techniques, outcomes, and unique complications associated with implantation of scleral-fixated IOLs.

Stephens JD, Adam MK, Todorich B, **Faia LJ**, Garg S, Dunn JP and Mehta S (2017). "Optical coherence tomography findings in endogenous fungal chorioretinitis, retinitis, and endophthalmitis." Ophthalmic Surgery Lasers and Imaging Retina 48(11): 894-901.

[Request Form](#)

Department of Ophthalmology

BACKGROUND AND OBJECTIVE: To describe spectral-domain optical coherence tomography (SD-OCT) findings in eyes with endogenous fungal chorioretinitis and endophthalmitis. **PATIENTS AND METHODS:** Retrospective, observational case series of subjects at Wills Eye Hospital and William Beaumont Hospital were identified by screening OCT billing data and cross-referencing with patient charts. Clinical and imaging data were collected for each patient and reviewed. **RESULTS:** Twelve eyes of seven consecutive patients were identified, demonstrating two patterns of posterior ocular involvement: chorioretinal infiltration and superficial retinal/retinal vascular infiltration without choroidal involvement. Six of 12 eyes had follow-up imaging performed after antifungal treatment, which demonstrated decreased size of choroidal and/or retinal infiltrates. **CONCLUSIONS:** All patients with follow-up imaging had anatomic improvement by OCT of the lesions with treatment. In the future, OCT imaging may provide a method to assess therapeutic response and prognosis for visual recovery in patients with endogenous fungal ocular disease.

Su A, Van Den Hoogen I, Lu Y, Rizvi A, Berman D, Callister T, DeLago A, Hadamitzky M, Hausleiter J, Al-Mallah M, Budoff M, Kaufmann P, **Raff G, Chinnaiyan K**, Cademartiri F, Maffei E, Villines T, Kim YJ, Leipsic J, Feuchtner G, Pontone G, Andreini D, Marques H, Rubinshtein R, Achenbach S, Shaw L, Dunning A, Chang HJ, Chow B, Cury R, Gomez M, Hindoyan N, Jones EC, Peña JM, Lin FY, Min JK and Al'Aref SJ (2017). "Effect of non-statin lipid-lowering drug therapy on coronary plaque composition as assessed by coronary computed tomography angiography." Circulation 136(Sup 1): A18737.

[Full-Text](#)

Department of Internal Medicine

Introduction: Statin therapy effectively prevents cardiovascular events. Non-statin lipid-lowering drug therapy (NS-LLDT) is typically used as second-line therapy in patients intolerant to statins. While statin therapy has been shown to increase calcified plaque volume, the effect of NS-LLDT on plaque composition is unknown. **Objective:** To determine whether NS-LLDT, alone or in combination with statin therapy, affects plaque composition in patients undergoing coronary computed tomography angiography (cCTA). **Methods:** We analyzed patients enrolled in a prospective, multicenter registry (CONFIRM) of patients undergoing cCTA. Patients with known lipid-lowering therapy status and without previously established coronary artery disease were included in the analysis. Multivariate ordinal regression, adjusted for cardiac risk factors, was performed to determine the effect of lipidlowering therapy (NS-LLDT, statin, or both) on the number of coronary artery segments (none, 1-2, or >2 segments) with each plaque type (non-calcified (NCP), partly calcified (PCP), or calcified (CP)). **Results:** Of the 27,125 patients in CONFIRM, 4945 patients met the inclusion criteria. 146 (3.0%) patients were on NS-LLDT, 1725 (34.9%) were on statin therapy, and 225 (4.6%) were on

both NS-LLDT and statin therapy. At baseline, patients on lipid-lowering therapy had more prevalent risk factors compared to patients not on lipid-lowering therapy. NS-LLDT, as compared to no NS-LLDT, was not associated with a higher number of segments possessing NCP (OR 1.29, 95% CI 0.81-2.00, $p = 0.26$), PCP (OR 1.27, 95% CI 0.82-1.92, $p = 0.27$), or CP (OR 1.30, 95% CI 0.90-1.86, $p = 0.16$). Patients on NS-LLDT plus statin therapy, in comparison to patients on statin therapy alone, did not have a different prevalence of NCP (OR 0.90, 95% CI 0.62-1.29, $p = 0.58$), PCP (OR 1.02, 95% CI 0.72-1.43, $p = 0.91$), or CP (OR 1.21, 95% CI 0.87-1.67, $p = 0.26$), suggesting no interaction between NS-LLDT and statin therapy. Conclusions: NS-LLDT was not associated with differences in plaque composition by cCTA, and did not modify the impact of statin therapy on plaque composition. The absence of an effect of NS-LLDT on plaque composition could explain the superiority of statin therapy in prevention of cardiovascular events.

Sura K, **Grills IS**, Vu CC, **Stevens CW**, Ye H and **Guerrero TM** (2017). "Improved survival with increased time-to-radiation and sequential chemotherapy after surgery for pN2 non-small-cell lung cancer." *Clinical Lung Cancer*. ePub Ahead of Print.

[Full-Text](#)

Department of Radiation Oncology

Background: Currently, the ideal timing for postoperative radiotherapy (PORT) and chemotherapy is unknown. The present study evaluated their relative timing on overall survival (OS) using the National Cancer Database (NCDB). Materials and Methods: The NCDB was queried for patients from 2004 to 2012 with resected non-small-cell lung cancer (NSCLC), pathologically involved N2 (pN2) nodes, and negative margins. All patients underwent adjuvant chemotherapy and external beam radiotherapy. The time to radiation (TTR) was determined from the date of surgery to the start of PORT, with the exclusion of those receiving PORT < 4 weeks or > 24 weeks postoperatively. Early and late TTR was dichotomized at 8 weeks after receiver operating characteristic analysis. Multivariate Cox regression analysis was conducted to predict the variables significantly associated with survival. Results: A total of 1629 patients were eligible for analysis. Of the 1629 patients, 703 had received PORT < 8 weeks and 926 had received PORT \geq 8 weeks postoperatively. The receipt of PORT after 8 weeks was associated with better OS ($P = .0044$). No significant differences were found in survival in the concurrent group comparing early and later TTR ($P = .9119$). However, a significant OS benefit was found for sequential chemotherapy with an increased TTR ($P = .0045$). Older age, male sex, shorter distance traveled, increased nodal positivity, larger tumor size, higher Charlson/Deyo comorbidity score, and early TTR were associated with inferior survival on multivariate analysis. Conclusion: A TTR of \geq 8 weeks with sequential chemotherapy in the setting of PORT was associated with improved survival in patients with NSCLC with pN2 nodes.

Sura K, Wilson LD and **Grills IS** (2017). "Comparison of self-reported data on student doctor network to objective data of the National Resident Matching Program." *Journal of the American College of Radiology* 14(12): 1594-1597.

[Full-Text](#)

Department of Radiation Oncology

Purpose: To compare matching outcomes between self-reporting on Student Doctor Network (SDN) and objective data from the National Resident Matching Program (NRMP). Materials and Methods: Data were collected from SDN starting in the 2010 to 2011 academic year and extending to the 2015 to 2016 academic year. A total of 193 radiation oncology applicants had reported data during the period. A total of four applicants (2.1%) did not match and were excluded from the analysis. Applicants were compared with the NRMP charting outcomes of 2011, 2014, and 2016. Results: US allopathic seniors comprised a majority of those reporting on SDN (95.2%). The majority of applicants (58.2%) self-reported in the later years between 2014 and 2016. Those reporting on SDN were more likely to be members of Alpha Omega Alpha (39.7% on SDN versus 27.5% in 2016 NRMP, 23.6% in 2014 NRMP, and 31.2% in 2011 NRMP) and had higher mean United States Medical Licensing Examination (USMLE) step 1 and step 2 scores. Of the applicants, 81% matched within their top three ranked residencies on their match list. Common themes associated with reasons for their successful match included research experience, letters of recommendation, and away rotations. Common themes associated with advice given to future applicants were the importance of research, personality, and away rotations. Conclusion: Self-reporting on SDN does have a bias toward more

successful radiation oncology applicants compared with the objective NRMP data. However, if self-reporting increases, SDN may serve as a reasonably accurate source of information for future applicants.

Swor RA, Berger D, Reynolds J and Otero R (2017). "Will extending time to neuroprognostication improve cardiac arrest outcomes." *Circulation* 136(Sup 1): A18794.

[Full-Text](#)

Department of Emergency Medicine

Introduction: Delayed awakening is not rare after cardiac arrest resuscitation. Literature also identifies that most post cardiac arrest deaths in hospital are due to withdrawal of care. Objective: We sought to describe the frequency of early death after resuscitation as a means of estimating the potential benefit of delayed prognostication. Methods: We performed a retrospective analysis of all cardiac arrest admissions to acute care hospitals in one state during a 3 year period (2010-2013). Cases were identified with ICD-9 CM codes for cardiac arrest (427.5) or VF (427.41). Patient demographics, Inpatient length of stay (LOS), outcome (survival to discharge), secondary diagnoses were recorded on all patients. Length of stay was dichotomized as ≤ 3 days (early death) or 4 or more days, and descriptive statistics calculated. To assess the relationship between hospital survival rates and rates of early death, we evaluated these variables in state hospitals with the highest quartile of cardiac arrest volumes. Results: During the study period 4,306 patient records met the inclusion criteria, of which 1650 (38.3) survived to hospital discharge. The patients were primarily male (57.6%), with mean (range) age was 64.0 (18-112) years. Of all patients, the mean LOS was 6.1 days, with 2247 (52.2%) dying in ≤ 3 days. Patients with early death, when compared to those with late deaths, were older 64.2 vs 61.7 years, $p < 0.001$, more likely female (56.3% vs 39.3%, $p < 0.001$), or Non VT/VF (58.4 % vs 39.8%, $p < 0.001$). Hospital survival rates varied from 24.4%-55.7%, and rates of early death varied from 36.5%-60.7%. Hospital early death rates were negatively associated with hospital survival rates (pearson correlation $p=0.001$). Conclusion: In the time period before the AHA 2015 Guidelines, a majority of inpatient post arrest deaths occurred in ≤ 3 days. Early deaths were associated with factors typically predictive of poor cardiac arrest outcome. We observe that high hospital survival rates were associated with low rates of early death. Whether these data reflect an expected association, or clinically important variation of practice requires further scrutiny.

Tantisattamo E and Mopuru H (2017). "Weight loss in pre-transplant obesity: A possible strategy for post-kidney transplant blood pressure control." *Transplant International* 30(Sup 2): 511-512.

[Request Form](#)

Department of Internal Medicine

Tantisattamo ETE and Mopuru H (2017). "The trend in weight gain after kidney transplantation in pre-transplant non-obese patients." *Transplant International* 30(Sup 2): 342-343.

[Request Form](#)

Department of Internal Medicine

Thottam PJ and Mehta DK (2017). "The utilization of transoral robotic surgery in the pediatric patient," In Gil Z, Amit M and Kupferman ME (ed). *Atlas of Head and Neck Robotic Surgery*. Cham: Springer International Publishing. pp: 143-147.

[Full-Text](#)

Department of Surgery

Transoral robotic surgery (TORS) was first described in head and neck cancer cases in adults and, over time, expanded into treatment for adult obstructive sleep apnea (OSA). As the technology involving this technique and its associated instrumentation has improved, its utilization has expanded. More recently, through a series of publications, there has been an evolving interest in the treatment of pediatric airway ailments.

Totoraitis K, Magro CM and Friedman A (2017). "Serpiginous purpuric eruption of the leg." Journal of Drugs in Dermatology 16(10): 1036-1038.

[Request Form](#)

OUWB Medical Student Author

A previously healthy 68-year-old Male presented with a rash on his right lower leg. The lesions had spread along the leg since onset 9 days prior, and the patient reported localized soreness and pruritus. He denied systemic symptoms including fever, fatigue, myalgia, joint pain, and recent illness. Physical examination revealed a serpiginous, purpuric eruption on the anterior and posterior right thigh and lower leg. A 4mm punch biopsy from the right lower leg revealed a Th2 dominant process reflective of a type IV delayed hypersensitivity reaction. Superficial and deep angiocentric and eccrinotropic lymphocytic infiltrate and tissue eosinophilia were noted. Degranulated eosinophils forming 'flame figures' were also identified with accompanying mural edema and red blood cell extravasation. Further evaluation revealed an elevated antistreptolysin O antibody, though the remainder of the work up was unremarkable. Clinicohistopathologic correlation supported the diagnosis of Blaschkolinear purpuric Wells' Syndrome. This case highlights a unique presentation of a rare inflammatory dermatosis, and serves as a reminder that given Wells' can be associated with underlying malignancy, an age appropriate work up, based on patient history and presentation, may be warranted.

Toushan M, Atodaria A, Lynch SD, **Kanaan HD, Yu L, Amin MB, Tahhan M, Zhang PL, Kellerman PS** and **Swami A** (2017). "Bilateral testicular infarction from IgA vasculitis of the spermatic cords." Case Reports in Nephrology 2017(Article ID 9437965): 1-5.

[Full-Text](#)

Department of Pathology

Department of Internal Medicine

Trese MGJ, Lewis AW, Blachley TS, Stein JD and Moroi SE (2017). "Changing initial glaucoma medical therapy increases healthcare resource utilization." Journal of Ocular Pharmacology and Therapeutics 33(8): 591-597.

[Request Form](#)

Department of Ophthalmology

Purpose: To determine the frequency and economic impact of changing initial glaucoma therapy for patients with newly diagnosed open-angle glaucoma (OAG) or ocular hypertension (OHT). Methods: This retrospective longitudinal cohort study identified individuals within a large managed care network in the United States, who were newly diagnosed with OAG or OHT from 2001 to 2012 and were prescribed either a topical beta blocker (BB) or a prostaglandin analog (PGA). Claims data were analyzed over the 12-month period following their index prescription to determine physician prescribing habits, healthcare resource utilization patterns, and sociodemographic factors which may have contributed to changing the initial treatment strategy. Results: A total of 15,019 beneficiaries were identified with newly diagnosed OAG or OHT and whose index therapy was either a topical BB or PGA. Among these enrollees 80.9% were started on PGAs, while 19.1% were started on BBs. Of these beneficiaries, 29.2% of those started on PGAs and 39.5% of those started on BBs underwent a change in therapy within 12 months of their index prescription. Those in the topical BB treatment group had a 38% increased odds of changing glaucoma therapy relative to those started on PGAs (odds ratio [OR] 0.61, 95% CI:0.56-0.68). Patients who changed therapy required more frequent office visits ($P < 0.0001$) and incurred higher median eye care related charges ($P < 0.0001$) compared to those who remained on the index therapy unchanged. Conclusions: Changing initial ocular hypotensive therapy is common. Individuals who undergo a change in therapy required more frequent face-to-face monitoring and incurred higher healthcare related costs. Identifying strategies capable of optimizing the process of initiating ocular hypotensive therapy are appealing and possess the potential to improve patient outcomes and reduce healthcare costs. © Copyright 2017, Mary Ann Liebert, Inc. 2017.

Wang WG, Ye H and **Chinnaiyan P** (2017). "Practice patterns and survival outcomes of intracranial germinoma: An analysis of the National Cancer Database." Journal of Neuro-Oncology: 1-6. ePub Ahead of Print.

[Request Form](#)

Department of Radiation Oncology

The goal of the study is to examine the practice pattern and survival outcome of adult and pediatric patients with intracranial germinoma. Patients from the National Cancer Database (NCDB) brain tumor registry between the years 2004–2014 with intracranial germinoma were extracted for analysis. Patients who had distant metastasis, received no treatments, or only surgery/chemotherapy alone were excluded. An age cutoff of > 21 years old was used to define the pediatric population. Patients were stratified by the treatments radiation therapy alone (RT) and chemotherapy followed by radiation therapy (C + RT). 445 patients with intracranial germinoma meeting our inclusion criteria were identified. Of the adult patients, 65.7% received RT and 34.3% received C + RT, compared to the pediatric patients, where 31.8% received RT and 68.2% received C + RT. Those patients who received C + RT had a lower radiation dose compared to the RT group ($p < 0.001$). The 5 and 10 year overall survival (OS) for the entire cohort was 92.6 and 87.9%, respectively. Univariate analysis demonstrated improved OS with younger age, private insurance, C + RT treatment, and pediatric patients. Only age and insurance type remained significant on multivariate analysis. The 5 year OS was 92.6% (RT) versus 97.2% (C + RT) ($p = 0.307$) and 83.4% (RT) versus 95.4% (C + RT) ($p = 0.122$) in the pediatric and adult patients, respectively. There is a higher use of C + RT with an accompanied reduction in RT dose in the treatment of intracranial germinoma. There is no difference in survival between the treatment approaches of RT or C + RT in the NCDB patient cohort.

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

[Request Form](#)

Department of Ophthalmology

Williams GA (2017). "Modifier –25 under the microscope: Removing some of the mystery behind the use of this often-used CPT code." Retina Today 2017(Nov-Dec): 21-22.

[Request Form](#)

Department of Ophthalmology

Xu Z, Mathieu D, Heroux F, Abbassy M, Barnett GH, Mohammadi AM, Kano H, Caruso J, **Grills IS**, Lee KC, Krishnan S, Kaufmann AM, Lee JYK, Pierce J, Maloney E, Kondziolka D, Hess JA, Chiang VL, Lunsford LD and Sheehan JP (2017). "Stereotactic radiosurgery for trigeminal neuralgia in patients with multiple sclerosis: A multicenter study."

International Journal of Radiation Oncology Biology Physics 99(2): S186-S187.

[Full-Text](#)

Department of Radiation Oncology

Yousif MJ and **Bicos J** (2017). "Biomechanical comparison of single-versus double-row capsulolabral repair for shoulder instability." Orthopaedic Journal of Sports Medicine 5(12): 5.

[Full-Text](#)

Department of Orthopedic Surgery

Background: The glenohumeral joint is the most commonly dislocated joint in the body. Failure rates of capsulolabral repair have been reported to be approximately 8%. Recent focus has been on restoration of the capsulolabral complex by a double-row capsulolabral repair technique in an effort to decrease redislocation rates after arthroscopic capsulolabral repair. Purpose: To present a review of the biomechanical literature comparing single-versus double-row capsulolabral repairs and discuss the previous case series of double-row fixation. Study Design: Narrative review. Methods: A simple review of the literature was performed by PubMed search. Only biomechanical studies comparing single-versus double-row capsulolabral repair were included for review. Only those case series and descriptive techniques with clinical results for double-row repair were included in the discussion. Results: Biomechanical comparisons evaluating the native footprint of the labrum demonstrated significantly superior restoration of the footprint through

double-row capsulolabral repair compared with single-row repair. Biomechanical comparisons of contact pressure at the repair interface, fracture displacement in bony Bankart lesion, load to failure, and decreased external rotation (suggestive of increased load to failure) were also significantly in favor of double-versus single-row repair. Recent descriptive techniques and case series of double-row fixation have demonstrated good clinical outcomes; however, no comparative clinical studies between single- and double-row repair have assessed functional outcomes. Conclusion: The superiority of double-row capsulolabral repair versus single-row repair remains uncertain because comparative studies assessing clinical outcomes have yet to be performed.

Yu Z, Pang YF, Wang LD, Ezekwudo DE, Ogunleye F, **Gaikazian SS, Micale M, Huang J, Blenc AM** and **Jaiyesimi I** (2017). "Unusual presentation of a small-cell variant of anaplastic large-cell lymphoma case: When a septic picture is not sepsis." Case Reports in Hematology 2017(Article ID 7292148): 9.

[Full-Text](#)

Department of Internal Medicine

Department of Pathology

We report a case of a small-cell variant of anaplastic large-cell lymphoma, with an unusual clinical presentation mimicking sepsis and a fulminant clinic course, in a 48-year-old Caucasian female. In this report, we discuss the diagnostic challenge, histopathologic features, and unique cytogenetic features of this case, in order to raise awareness of this rare presentation and emphasize the importance of meticulous peripheral smear examination and early bone marrow evaluation.

Zhang X, **Chen L**, Liu Y, Xu Y, Xu Y, Zhang X, Shi Y, Wang C, **Zhang PL** and Liu Y (2017). "Improving the cytological diagnosis of high-grade serous carcinoma in ascites with a panel of complementary biomarkers in cell blocks."

Cytopathology: 1-7. ePub Ahead of Print.

[Full-Text](#)

Department of Pathology

INTRODUCTION: Precise cytological diagnosis of pelvic high-grade serous carcinoma (HGSC) in ascites is important for tumour staging, therapeutic decision-making and prognostic evaluation. However, it can often be difficult to distinguish metastatic HGSC cells from reactive mesothelial cells based on morphology alone. Immunocytochemical analysis of ascites cell blocks has been used to obtain accurate diagnosis and provide a reliable basis for treatment decisions in the clinic. This study was performed to determine whether a panel of antibodies is necessary to achieve high specificity and sensitivity for the identification of HGSC cells.

METHODS: Ascites samples from 70 cases (70/253, 27.7%) of histologically confirmed HGSC were postoperatively collected from 2012 to 2015 and were immunocytochemically analysed. **RESULTS:** The sensitivity and specificity of Ber-EP4 (a marker of HGSC) for detecting HGSC was 85.7% and 82.1%, respectively, whereas the sensitivity and specificity of HBME-1 for identifying mesothelial cells was 100% and 68.3%, respectively. To improve the rate of detection further of HGSC, 29 cases of ascites were also stained for E-cadherin (a marker of HGSC) and calretinin (a marker of mesothelial cells). The combination of Ber-EP4 and E-cadherin as markers of adenocarcinoma cells increased the sensitivity and specificity for HGSC detection to 100% and 88.9%, respectively. Meanwhile, the sensitivity and specificity for mesothelial cell identification increased to 100% and 90%, respectively, when HBME-1 and calretinin were combined.

CONCLUSION: This panel of complementary biomarkers is valuable and ideal for the differential diagnosis of HGSC based on ascites cytology.