

OAKLAND UNIVERSITY WILLIAM BEAUMONT SCHOOL OF MEDICINE

PUBLICATION LIST

April - June 2018

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Abdulla RK and **Safian RD** (2018). "Rumpel-Leede phenomenon after radial artery catheterization." Circulation: Cardiovascular Interventions 11(4): e006507.

[Full Text](#)

Department of Internal Medicine

Abramson DH, **Folberg R** and Francis JH (2018). "Clinicopathological correlation of choroidal invasion in retinoblastoma." JAMA Ophthalmology 136(6): e180940-180941.

[Full Text](#)

Department of Foundational Medical Studies

This case report describes a 6-year-old girl with bilateral retinoblastoma and choroidal invasion.

Alan CW and **Daniel KF** (2018). "Safety and efficacy of balloon kyphoplasty at 4 or more levels in a single anesthetic session." Journal of Neurosurgery: Spine SPI 28(4): 372-378.

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Department of Neurosurgery

OUWB Medical Student Author

Objective: In this case series, the authors evaluated the safety of balloon kyphoplasty at 4 or more vertebral levels in a single anesthetic session. The current standard is that no more than 3 levels should be cemented at one time because of a perceived risk of increased complications. Methods: A retrospective chart review was performed for 19 consecutive patients who underwent ≥ 4 -level balloon kyphoplasty between July 1, 2011, and December 31, 2015. Outcomes documented included kyphoplasty-associated complications and incidences of subsequent vertebral fracture. Results: Nineteen patients aged 22 to 95 years (mean 66.1 years, median 66 years; 53% male, 47% female) had 4 or more vertebrae cemented during the same procedure (mean 4.6 levels [62 thoracic, 29 lumbar]). No postoperative anesthetic complication, infection, extensive blood loss, symptomatic cement leakage, pneumothorax, or new-onset anemia was observed. Five patients experienced new compression fracture within a mean of 278 days postoperatively. One patient with metastatic cancer suffered bilateral pulmonary embolism 19 days after surgery, but no evidence of cement in

the pulmonary vasculature was found. Conclusions: In this case series, kyphoplasty performed on 4 or more vertebral levels was not found to increase risk to patient safety, and it might decrease unnecessary risks associated with multiple operations. Also, morbidity associated with leaving some fractures untreated because of an unfounded fear of increased risk of complications might be decreased by treating 4 or more levels in the same anesthetic session.

Albear S, Salim M, **Bozyk PD** and **Swanberg SM** (2018). "The association between hookah smoking and infectious diseases: A systematic review." *American Journal of Respiratory and Critical Care Medicine* 197: A5521-A5521.

[Full Text](#)

Department of Foundational Medical Studies

Department of Internal Medicine

OUWB Medical Student Author

Rationale: While the negative effects of tobacco smoking on health is well known and studied, including COPD, cancer, and hypertension, untoward effects of hookah smoking, including unique toxins, and its role in the spread of infectious disease, are less known. The device is typically shared within the group of people without regulation on how they are cleaned between users. Given the rise in popularity in recent years, this systematic review assesses the extent to which hookah smoking contributes to the spread of infectious diseases and healthcare providers awareness of hookah smoking. Methods: A systematic review was conducted following the PRISMA guidelines. The following databases were searched with no date limit through May 2017: MEDLINE (PubMed), EMBASE, Cochrane Database of Systematic Reviews, Web of Science, Scopus, CINAHL, Northern Lights, Grey Literature Report, National Guideline Clearinghouse, Proquest Dissertations & Theses, and the first 500 results of Google Scholar. Both human and non-human studies were included that reported on the qualitative and quantitative association between hookah smoking and infectious disease. We excluded case series, case reports, editorials, commentaries, and notes as well as studies that derived their data from surveys or questionnaires. Non-English language studies were also excluded. Results: The searches retrieved 4019 studies, of which 272 met our criteria for full-text screening and data extraction. Multiple studies document association of hookah smoking with infectious diseases. Most notable were resistant bacterial lung infections being spread by contaminated water pipe components and increased incidence of tuberculosis. There were also documented links to other nonpulmonary infectious diseases like cervicitis, periodontal disease, reactivated herpes, toxoplasmosis, hepatitis C and H. pylori infection. Lymphocyte dysfunction may predispose to infection. Conclusion: There is association between hookah smoking and infectious disease. Etiologies of infection may in part result from impaired immune response with direct spread of pathogens from the device itself, though is less defined. This lack of data and the rise in hookah use makes it a rich area for future studies.

Aljassem A, Hall L, Cohn S, Bedi D, Alsibae M, Putchakayala K, Tasleem S, **Samarapungavan D, Carpenter C** and **Koffron A** (2018). "Closing Pandora's Box: An evidence based approach to opioid-tolerant patients following transplantation. The case for IV methadone." *American Journal of Transplantation* 18: 978-979.

[Full Text](#)

Department of Biomedical Sciences

Department of Physical Medicine and Rehabilitation

Department of Surgery

Department of Internal Medicine

Al-Katib S, Colvin R and **Sokhandon F** (2018). "Intravascular large b-cell lymphoma presenting with diffuse gallbladder wall thickening: A case report and literature review." *Case Reports in Radiology* 2018, Article ID 2494207: 5.

[Full Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Intravascular large B-cell lymphoma is a rare subtype of extranodal diffuse B-cell lymphoma characterized by proliferation of neoplastic cells within the lumen of small and medium sized vessels. Clinical and imaging

findings are nebulous as the intravascular subtype of lymphoma can involve a multitude of organs. Involvement of the gallbladder is extremely uncommon, and imaging findings can be easily confused for more prevalent pathologies. We report a case of intravascular large B-cell lymphoma in an 83-year-old male and review clinical presentation and imaging findings on CT, ultrasound, hepatobiliary iminodiacetic acid (HIDA) scan, and MRI. It is important for the radiologist to know about this disease as the imaging findings are atypical of other types of lymphoma, and this may lead to a delay in diagnosis and treatment.

Alyesh DM, Seth M, Miller DC, Dupree JM, Syrjamaki J, Sukul D, **Dixon S**, Kerr EA, Gurm HS and Nallamotheu BK (2018). "Exploring the healthcare value of percutaneous coronary intervention." Circulation: Cardiovascular Quality and Outcomes 11(6): e004328.

[Full Text](#)

Department of Internal Medicine

Aneese AM, Ghaith G, Cannon ME, Manuballa V and **Cappell MS** (2018). "EUS-guided methylene blue injection to facilitate endoscopic cannulation of an obscured pancreatic duct orifice after ampullectomy." The American Journal of Gastroenterology 113(5): 782-783.

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OUWB Medical Student Author

Department of Internal Medicine

Anyaiwe DEO, Singh GB, **Wilson GD** and Geddes TJ (2018). "Computational convolution of SELDI data for the diagnosis of Alzheimer's disease." High-Throughput 7(2): 14.

[Full Text](#)

Department of Radiation Oncology

Alzheimer's disease is rapidly becoming an endemic for people over the age of 65. A vital path towards reversing this ominous trend is the building of reliable diagnostic devices for definite and early diagnoses in lieu of the longitudinal, usually inconclusive and non-generalize-able methods currently in use. In this article, we present a survey of methods for mining pools of mass spectrometer saliva data in relation to diagnosing Alzheimer's disease. The computational methods provides new approaches for appropriately gleaning latent information from mass spectra data. They improve traditional machine learning algorithms and are most fit for handling matrix data points including solving problems beyond protein identifications and biomarker discovery.

Arianpour K, Svider PF, Yuhan B, Hooda Z, Eloy JA and Folbe AJ (2018). "Evolving patterns in the diagnosis and management of allergy-mediated disorders." International Forum of Allergy & Rhinology 8(8): 928-933.

[Full Text](#)

OUWB Medical Student Author

Background: This analysis explores the increasing heterogeneity of trends in allergy management under the premise that the practice of allergy has undergone significant changes in national economics, healthcare delivery, and treatment options from 2007 to 2016. Methods: Centers for Medicare and Medicaid Services (CMS) data were obtained for: (1) temporal trends in allergy immunotherapy injection (Current Procedural Terminology [CPT] codes 95115, 95117) and testing (CPT 95004, 95024) from 2007 to 2016; (2) geographic trends; and (3) practitioners administering immunotherapy. Although there are no sublingual immunotherapy (SLIT) CPT codes, billing for unlisted allergy/immunologic services (CPT 95199) were obtained. Results: Since 2007, there were 99.5 million allergy tests and 33.5 million immunotherapy injections billed to Medicare beneficiaries. Increases in testing have outpaced rising immunotherapy administration (49.7% vs 19.6% increase). Significant regional variation in testing rates was noted, with the greatest ratio of testing to immunotherapy in the South (0.35) and smallest ratio in the Northeast (0.18). The maximum unlisted allergy services billed was 594 (of which includes SLIT), compared to annual subcutaneous immunotherapy (SCIT) totals in the millions. The majority of immunotherapy in 2016 was administered by allergists/immunologists (51.6%) followed by otolaryngologists (31.2%), trends that have remained consistent since 2012. Conclusion: Physicians have been more aggressive in the workup of allergy-mediated disorders in recent years. Although differences in allergen load exist, there is tremendous geographic variation in the ratio of testing to immunotherapy. While the role otolaryngologists play in immunotherapy

remains stable, allergists manage the majority of patients, reinforcing the importance of interdisciplinary cooperation and outreach. SLIT does not appear to play a significant role in this population.

Arias JJ, **Tyler AM**, Oster BJ and Karlawish J (2018). "The proactive patient: Long-term care insurance discrimination risks of Alzheimer's disease biomarkers." *The Journal of Law, Medicine & Ethics* 46(2): 485-498.

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Department of Biomedical Sciences

Previously diagnosed by symptoms alone, Alzheimer's disease is now also defined by measures of amyloid and tau, referred to as ?biomarkers.? Biomarkers are detectible up to twenty years before symptoms present and open the door to predicting the risk of Alzheimer's disease. While these biomarkers provide information that can help individuals and families plan for long-term care services and supports, insurers could also use this information to discriminate against those who are more likely to need such services. In this article, we evaluate whether state laws prohibit long-term care insurers from making discriminatory or unfair underwriting and coverage decisions based Alzheimer's disease biomarkers status. We report data demonstrating that current state laws do not provide meaningful protections from discrimination by long-term care insurers based on biomarker information.

Ayoub C, Kritharides L, Yam Y, Chen L, Hossain A, Achenbach S, Al-Mallah MH, Andreini D, Berman DS, Budoff MJ, Cademartiri F, Callister TQ, Chang HJ, **Chinnaiyan K**, Cury RC, Delago A, Dunning A, Feuchtner G, Gomez M, Gransar H, Hadamitzky M, Hausleiter J, Hindoyan N, Kaufmann PA, Kim YJ, Leipsic J, Maffei E, Marques H, Pontone G, Raff G, Rubinshtein R, Shaw LJ, Villines TC, Min JK and Chow BJW (2018). "Prognostic value of age adjusted segment involvement score as measured by coronary computed tomography: a potential marker of vascular age." *Heart and Vessels* 33: 1288.

[Full Text](#)

Department of Internal Medicine

Extent of coronary atherosclerotic disease (CAD) burden on coronary computed tomography angiography (CCTA) as measured by segment involvement score (SIS) has a prognostic value. We sought to investigate the incremental prognostic value of 'age adjusted SIS' (aSIS), which may be a marker of premature atherosclerosis and vascular age. Consecutive patients were prospectively enrolled into the CONFIRM (Coronary CT Angiography Evaluation For Clinical Outcomes: An International Multicentre) multinational observational study. Patients were followed for the outcome of all-cause death. aSIS was calculated on CCTA for each patient, and its incremental prognostic value was evaluated. A total of 22,211 patients [mean age 58.5 ± 12.7 years, 55.8% male] with a median follow-up of 27.3 months (IQR 17.8, 35.4) were identified. After adjustment for clinical factors and presence of obstructive CAD, higher aSIS was associated with increased death on multivariable analysis, with hazard ratio (HR) 2.40 (1.83–3.16, $p < 0.001$), C-statistic 0.723 (0.700–0.756), net reclassification improvement (NRI) 0.36 (0.26–0.47, $p < 0.001$), and relative integrated discrimination improvement (IDI) 0.33 ($p = 0.009$). aSIS had HR 3.48 (2.33–5.18, $p < 0.001$) for mortality in those without obstructive CAD, compared to HR 1.79 (1.25–2.58, $p = 0.02$) in those with obstructive CAD. In conclusion, aSIS has an incremental prognostic value to traditional risk factors and obstructive CAD, and may enhance CCTA risk stratification. © 2018 Springer Japan KK, part of Springer Nature

Bahado-Singh RO, Syngelaki A, Mandal R, Han B, Li L, Bjorndahl TC, Wang N, Maulik D, **Dong E**, Turkoglu O, Tseng CL, Zeb A, Redman M, Wishart DS and Nicolaides KH (2018). "First-trimester metabolomic prediction of stillbirth." *Journal of Maternal-Fetal and Neonatal Medicine*: 1-7.

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Department of Obstetrics and Gynecology

OUWB Medical Student Author

Background: Stillbirth remains a major problem in both developing and developed countries. Omics evaluation of stillbirth has been highlighted as a top research priority. Objective: To identify new putative first-trimester biomarkers in maternal serum for stillbirth prediction using metabolomics-based approach. Methods: Targeted, nuclear magnetic resonance (NMR) and mass spectrometry (MS), and untargeted liquid chromatography-MS (LC-MS) metabolomic analyses were performed on first-trimester maternal serum obtained from 60 cases that subsequently had a stillbirth and 120 matched controls. Metabolites by themselves or in combination with clinical factors were used to develop logistic regression models for

stillbirth prediction. Prediction of stillbirths overall, early (<28 weeks and <32 weeks), those related to growth restriction/placental disorder, and unexplained stillbirths were evaluated. Results: Targeted metabolites including glycine, acetic acid, L-carnitine, creatine, lysoPCaC18:1, PCaC34:3, and PCaC44:4 predicted stillbirth overall with an area under the curve [AUC, 95% confidence interval (CI)] = 0.707 (0.628–0.785). When combined with clinical predictors the AUC value increased to 0.740 (0.667–0.812). First-trimester targeted metabolites also significantly predicted early, unexplained, and placental-related stillbirths. Untargeted LC-MS features combined with other clinical predictors achieved an AUC (95%CI) = 0.860 (0.793–0.927) for the prediction of stillbirths overall. We found novel preliminary evidence that, verruculotoxin, a toxin produced by common household molds, might be linked to stillbirth. Conclusions: We have identified novel biomarkers for stillbirth using metabolomics and demonstrated the feasibility of first-trimester prediction.

Bahl A, Bagan M, **Joseph S** and **Brackney A** (2018). "Comparison of ultrasound and plain radiography for the detection of long-bone fractures." *Journal of Emergencies Trauma and Shock* 11(2): 115-118.

[Full Text](#)

Department of Emergency Medicine

Objective: To compare emergency medicine (EM) resident physicians' ability to identify long-bone fractures using ultrasound (US) versus plain radiography (X-ray). Methods: This was an IRB-approved, randomized prospective study. Study participants included 40 EM residents at a single site. Fractures were mechanically induced in five chicken legs, and five legs were left unfractured. Chicken legs were imaged by both modalities. Participants were given 2 min to view each of the images. Participants were randomized to either US or X-ray interpretation first and randomized to viewing order within each arm. Participants documented the presence or absence of fracture and location and type of fracture when pertinent. Mean proportions and standard deviations (SDs) were analyzed using paired t-test and linear models. Results: Forty residents (15 postgraduate years (PGY) -1, 12 PGY-2, 13 PGY-3) participated in the study. Thirty-one participants were male, and 19 were randomized to US first. Residents completed a mean of 185 (SD 95.8) US scans before the study in a variety of applications. Accurate fracture identification had a higher mean proportion in the US arm than the X-ray arm, 0.89 (SD 0.11) versus 0.75 (SD 0.11), respectively (P < 0.001). There was no statistically significant difference in US arm and X-ray arm for endpoints of fracture location and type. Conclusion: EM residents were better able to identify fractures using US compared to X-ray, especially as level of US and ED experience increased. These results encourage the use of US for the assessment of isolated extremity injury, particularly when the injury is diaphyseal.

Bahl A and Schafer S (2018). "Utility of abdominal computed tomography in geriatric patients on warfarin with a fall from standing." *Journal of Emergencies Trauma and Shock* 11(2): 88-91.

[Full Text](#)

Department of Emergency Medicine

Context: Geriatric head trauma resulting from falls has been extensively studied both in the presence and absence of blood thinners. In this population, however, the prevalence and extent of abdominal injury resulting from falls are much less defined. Aim: We aim to evaluate the utility of abdominal computed tomography (CT) imaging in geriatric patients on Warfarin with a recent history of fall. Setting and Design: A retrospective analysis was completed of consecutive geriatric patients who presented to a Level 1 Trauma Center emergency department after fall from standing while taking Warfarin. Methods: Inclusion criteria included age 65 years or older and fall while taking Warfarin. Incomplete medical records were excluded from the study. Data collection included the type of anticoagulant medications, demographics, physical examination, laboratories, CT/X-ray findings if ordered, and final diagnosis on admission. Categorical variables were examined using Pearson's Chi-square where appropriate (expected frequency >5), or Fisher's Exact test. Continuous variables were examined using nonparametric Wilcoxon rank tests. Results: Eight hundred and sixty-three charts were reviewed. One hundred and thirty-one subjects met inclusion criteria. Mean age was 83 years. Nearly 39.6% of patients were male. A total of 48 patients had abdominal CT imaging. Seven of the 131 patients (5.3%) had an abdominal injury. Abdominal tenderness was predictive of injury, with 4 of 7 cases with abdominal injury demonstrating abdominal tenderness versus only 10 of 124 cases without abdominal injury demonstrating tenderness (P = 0.003). Abdominal CTs were ordered in 11 of 19 cases of patients that exhibited head trauma yet none of these patients were shown to have sustained abdominal trauma (P = 0.08). There was no association between international normalized ratio level and

presence of abdominal injury (P = 0.99). Conclusions: A small percentage of elderly fall patients on Warfarin have a significant abdominal injury. Anticoagulated geriatric patients are sometimes subjected to abdominal scans liberally without supporting physical examination findings such as abdominal tenderness or presence of a distracting injury. Specifically, the utility of abdominal CT is questionable in isolated head injury patients. Further, taking Warfarin or other anticoagulant medications do not seem to increase the risk of intraabdominal injury.

Baker D, Sevak S, Callahan RE, **Czako PF, Lloyd LR and Nagar S** (2018). "Outcomes in patients with renal hyperparathyroidism requiring cinacalcet pre-operatively followed by parathyroidectomy." The American Journal of Surgery 217(1): 146-151.

[Full Text](#)

Department of Surgery

Background: Cinacalcet is an effective treatment for renal hyperthyroidism when traditional medical therapy has failed. We studied the impact of pre-operative cinacalcet administration on post-surgical outcomes. Methods: A retrospective analysis was performed of patients from 2002 to 2017 diagnosed with renal hyperparathyroidism requiring parathyroidectomy to evaluate the need for post-operative supplementation and outcomes. Results: 102 patients were identified; 34 patients were treated with cinacalcet prior to undergoing parathyroidectomy. The cinacalcet treatment cohort (CT) demonstrated a greater duration of renal replacement therapy (p = 0.03) relative to the untreated cohort (NC). NC had greater proportion receiving peritoneal dialysis (p = <0.0001) compared to other forms of renal replacement, greater pre-operative PTH levels (p = 0.001) and greater decrease in PTH after resection (p = 0.0086). Post-operative vitamin D supplementation was more frequent in the CT group (p = 0.02). After propensity matching for pre-operative PTH and duration of renal replacement therapy, there were no differences in post-operative supplementation or outcomes. Conclusions: Cinacalcet patients may have advanced disease. These patients have longer duration of renal failure and higher PTH levels. After propensity matching, no significant differences were noted in terms of need for supplementation or outcomes.

Bang S and Bahl A (2018). "Impact of early educational intervention on coding for first-year emergency medicine residents." AEM Education and Training 2(3): 213-220.

[Full Text](#)

OUWB Medical Student Author

Department of Emergency Medicine

Objectives: Coding of a medical visit is based on provider documentation in the medical record; the documentation should reflect the level of care that was provided. To maximize coding and subsequent billing, providers must complete various components of the record to best convey the complexity of the case. Little education is provided to resident physicians regarding appropriate documentation practices, and studies suggest a need for improved education in this area. The primary goal of this study is to determine if implementing an early educational intervention will improve billing and coding. Methods: This was a randomized, prospective controlled study in an academic Level I emergency department (ED). Interns without prior experience in billing and coding were eligible participants. Participants in the intervention group each received an interactive lecture on coding, evaluation and management (E/M) levels, and documentation macros, prior to their first ED rotation at the base hospital. A pocket card with E/M level requirements was given as a resource. Biweekly feedback was given to the residents to address any patterns of mistakes. The number of charts for each E/M level was collected from both groups, which were converted to relative value units (RVUs). A multivariate analysis using multivariate linear regressions controlling for age, sex of patient, admission rate, and month of encounter was used to statistically evaluate billing outcomes. Results: The mean RVUs per hour and encounter in the intervention group were, respectively, 3.52 and 3.84 while in the control group they were, respectively, 3.36 and 3.72 (p = 0.0112). Intervention group encounters had 27% greater odds (odds ratio = 1.27) of having a level 5 chart compared to the control group (p = 0.0025). Conclusion: The focused longitudinal educational interventions resulted in improved billing performances, reflected by better documentation, in the intervention group versus the control group.

Bastola S, **Halalau A**, Kc O and Adhikari A (2018). "A gigantic anal mass: Buschke–Löwenstein tumor in a patient with

controlled HIV infection with fatal outcome." [Case Reports in Infectious Diseases](#) vol. 2018, Article ID 7267213, 3.

[Full Text](#)

Department of Internal Medicine

Blas K, Wilson TG, Tonlaar N, Galoforo S, Hana A, Marples B and **Wilson GD** (2018). "Dual blockade of PI3K and MEK in combination with radiation in head and neck cancer." [Clinical and Translational Radiation Oncology](#) 11: 1-10.

[Full Text](#)

Department of Radiation Oncology

Background and Purpose: In this study we have combined fractionated radiation treatment (RT) with two molecular targeted agents active against key deregulated signaling pathways in head and neck cancer.

Materials and Methods: We used two molecularly characterized, low passage HNSCC cell lines of differing biological characteristics to study the effects of binimetinib and buparlisib in combination with radiation in vitro and in vivo. **Results:** Buparlisib was active against both cell lines in vitro whereas binimetinib was more toxic to UT-SCC-14. Neither agent modified radiation sensitivity in vitro. Buparlisib significantly inhibited growth of UT-SSC-15 alone or in combination with RT but was ineffective in UT-SCC-14. Binimetinib did cause a significant delay with RT in UT-SCC-14 and it significantly reduced growth of the UT-SCC-15 tumors both alone and with RT. The tri-modality treatment was not as effective as RT with a single effective agent.

Conclusions: No significant benefit was gained by the combined use of the two agents with RT even though each was efficacious when used alone.

Bonekamp D, Wolf MB, Roethke MC, Pahernik S, Hadaschik BA, Hatiboglu G, Kuru TH, Popeneciu IV, Chin JL, Billia M, **Relle J, Hafron J, Nandalur KR**, Staruch RM, Burtnyk M, Hohenfellner M and Schlemmer H-P (2018). "Twelve-month prostate volume reduction after MRI-guided transurethral ultrasound ablation of the prostate." [European Radiology](#) 29: 299.

[Full Text](#)

Department of Urology

Department of Diagnostic Radiology and Molecular Imaging

To quantitatively assess 12-month prostate volume (PV) reduction based on T2-weighted MRI and immediate post-treatment contrast-enhanced MRI non-perfused volume (NPV), and to compare measurements with predictions of acute and delayed ablation volumes based on MR-thermometry (MR-t), in a central radiology review of the Phase I clinical trial of MRI-guided transurethral ultrasound ablation (TULSA) in patients with localized prostate cancer.

Braunberger TL, **Vakharia P**, Nicholson CL, Parks-Miller A and Hamzavi IH (2018). "Carbon dioxide laser excision in hidradenitis suppurativa: Demographics, comorbidities, healing time and complications." [Lasers in Surgery and Medicine](#) 50(4): 360.

[Full Text](#)

OUWB Medical Student Author

Background: Hidradenitis suppurativa (HS) is often refractory to standard medical and surgical interventions. We characterized the efficacy and safety of carbon dioxide (CO₂) laser excision for the treatment of recalcitrant HS in an urban, academic dermatology center. **Study Design/Materials and Method:** On initial data pull, 72 patients were identified. This number was reduced to 38 patients by including HS patients with all data points at Henry Ford Hospital who underwent CO₂ laser excision between August 2014 to May 2017. Data were obtained from medical charts including healing and recurrence rates, complications, smoking status, and history of diabetes mellitus. **Results:** The average age at the time of the procedure was 37.5 years and mean BMI was 34.9. In total, 3 patients had recurrence at a mean of 6 months following the procedure. Postoperative complications included: infection (n=2), contracture (n=2), dehiscence (n=2), nerve entrapment (n=1). Patients with dehiscence were not smokers or diabetics. A total of 12 patients reported current cigarette use, 5 patients were former smokers, and 21 patients had never smoked. The mean healing time in both smokers and nonsmokers was 6 months. Nine patients had a history of diabetes mellitus, and 29 patients were not diabetic. The mean healing time was not significantly prolonged in diabetics when compared to non-diabetics and was 7.3 months and 5.4 months respectively. **Conclusion:** Both smokers and non-smokers demonstrated similar wound healing time, recurrence rates, and postoperative complications. Patients with diabetes mellitus had a prolonged healing time when compared to those without diabetes

mellitus. Our study identifies important characteristics that clinicians should consider when assessing HS patients for CO2 laser excision.

Bristow RG, Alexander B, Baumann M, Bratman SV, Brown JM, Camphausen K, Choyke P, Citrin D, Contessa JN, Dicker A, Kirsch DG, Krause M, Le Q-T, Milosevic M, Morris ZS, Sarkaria JN, Sondel PM, Tran PT, **Wilson GD**, Willers H, Wong RKS and Harari PM (2018). "Combining precision radiotherapy with molecular targeting and immunomodulatory agents: a guideline by the American Society for Radiation Oncology." *The Lancet Oncology* 19(5): e240-e251.

[Full Text](#)

Department of Radiation Oncology

The practice of radiation oncology is primarily based on precise technical delivery of highly conformal, image-guided external beam radiotherapy or brachytherapy. However, systematic research efforts are being made to facilitate individualised radiation dose prescriptions on the basis of gene-expression profiles that reflect the radiosensitivity of tumour and normal tissue. This advance in precision radiotherapy should complement those benefits made in precision cancer medicine that use molecularly targeted agents and immunotherapies. The personalisation of cancer therapy, predicated largely on genomic interrogation, is facilitating the selection of therapies that are directed against driver mutations, aberrant cell signalling, tumour microenvironments, and genetic susceptibilities. With the increasing technical power of radiotherapy to safely increase local tumour control for many solid tumours, it is an opportune time to rigorously explore the potential benefits of combining radiotherapy with molecularly targeted agents and immunotherapies to increase cancer survival outcomes. This theme provides the basis and foundation for this American Society for Radiation Oncology guideline on combining radiotherapy with molecular targeting and immunotherapy agents.

Burnett AC, Anderson PJ, Joseph RM, Allred EN, O'Shea TM, Kuban KCK, Leviton A, Shah B, Singh R, Smith A, Klein D, McQuiston S, Rollins J, Douglass L, Ware J, Coster T, Henson B, Wilson R, McGhee K, Lee P, Asgarian A, Sadhwani A, Perrin E, Neger E, Mattern K, Walkowiak J, Barron S, Frazier J, Venuti L, Powers B, Foley A, Dessureau B, Wood M, Damon-Minow J, Ehrenkranz R, Benjamin J, Romano E, Tsatsanis K, Chawarska K, Kim S, Dieterich S, Bearrs K, Peters N, Brown P, Ansusinha E, Waldrep E, Friedman J, Hounshell G, Allred D, Engelke SC, Darden-Saad N, Stainback G, Warner D, Wereszczak J, Bernhardt J, McKeeman J, Meyer E, Pastyrnak S, Burdo-Hartman W, Rathbun J, Nota S, Crumb T, Lenski M, Weiland D, Lloyd M, Hunter S, Msall M, Ramoskaite R, Wiggins S, Washington K, Martin R, Prendergast B, Scott M, **Klarr J**, Kring B, DeRidder J and Vogt K (2018). "Hand preference and cognitive, motor, and behavioral functioning in 10-year-old extremely preterm children." *The Journal of Pediatrics* 195: 279-282.

[Full Text](#)

Department of Pediatrics

The association of hand preference (left, mixed, and right) with cognitive, academic, motor, and behavioral function was evaluated in 864 extremely preterm children at 10 years of age. Left-handed and right-handed children performed similarly but mixed-handed children had greater odds of functional deficits across domains than right-handed children.

Calligaro KD, Amankwah KS, D'Ayala M, **Brown OW**, Collins PS, Eslami MH, Jain KM, Kassavin DS, Propper B, Sarac TP, Shutze WP and Webb TH (2018). "Guidelines for hospital privileges in vascular surgery and endovascular interventions: Recommendations of the Society for Vascular Surgery." *Journal of Vascular Surgery* 67(5): 1337-1344.

[Full Text](#)

Department of Surgery

The Hospital Privileges Practice Guideline Writing Group of the Society for Vascular Surgery is making the following five recommendations concerning guidelines for hospital privileges for vascular surgery and endovascular therapy. Advanced endovascular procedures are currently entrenched in the everyday practice of specialized vascular interventionalists, including vascular surgeons, but open vascular surgery remains uniquely essential to the specialty. First, we endorse the Residency Review Committee for Surgery recommendations regarding open and endovascular cases during vascular residency and fellowship training. Second, applicants for new hospital privileges wishing to perform vascular surgery should have completed an Accreditation Council for Graduate Medical Education-accredited vascular surgery residency or fellowship or American Osteopathic Association-accredited training program before 2020 and should obtain American Board of Surgery certification in vascular surgery or American Osteopathic Association certification within 7

years of completion of their training. Third, we recommend that applicants for renewal of hospital privileges in vascular surgery include physicians who are board certified in vascular surgery, general surgery, or cardiothoracic surgery. These physicians with an established practice in vascular surgery should participate in Maintenance of Certification programs as established by the American Board of Surgery and maintain their respective board certification. Fourth, we provide recommendations concerning guidelines for endovascular procedures for vascular surgeons and other vascular interventionalists who are applying for new or renewed hospital privileges. All physicians performing open or endovascular procedures should track outcomes using nationally validated registries, ideally by the Vascular Quality Initiative. Fifth, we endorse the Intersocietal Accreditation Commission recommendations for noninvasive vascular laboratory interpretations and examinations to become a Registered Physician in Vascular Interpretation, which is included in the requirements for board eligibility in vascular surgery, but recommend that only physicians with demonstrated clinical experience in the diagnosis and management of vascular disease be allowed to interpret these studies.

Chams S, **Hajj Hussein I**, El Sayegh S, Chams N and Zakaria K (2018). "Hypercalcemia as a rare presentation of angioimmunoblastic T cell lymphoma: a case report." Journal of Medical Case Reports 12(1): 101.

[Full Text](#)

Department of Foundational Medical Studies

Angioimmunoblastic T cell lymphoma is a rare malignancy, accounting for only 2% of all non-Hodgkin lymphomas, first described in the 1970s and subsequently accepted as a distinct entity in the current World Health Organization classification. Due to the paucity of this disease, there is still no identifiable etiology, no consistent risk factors, and the pathogenesis remains unclear.

Chancellor MB, Bartolone SN, Veerecke A and **Lamb LE** (2018). "Crowdsourcing disease biomarker discovery research: The IP4IC study." Journal of Urology 199(5): 1344-1350.

[Full Text](#)

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 determine BP-RS (Bladder Permeability Defect Risk Score). It is based on noninvasive urinary cytokines to discriminate patients with interstitial cystitis/bladder pain syndrome who had Hunner lesions from controls and patients with interstitial cystitis/bladder pain syndrome but without Hunner lesions. Materials and Methods: We performed a national crowdsourcing study in cooperation with the Interstitial Cystitis Association. Patients answered demographic, symptom severity and urinary frequency questionnaires on a HIPAA (Health Insurance Portability and Accountability Act) compliant website. Urine samples were collected at home, stabilized with a preservative and sent to Beaumont Hospital for analysis. The expression of 3 urinary cytokines was used in a machine learning algorithm to develop BP-RS. Results: The IP4IC study collected a total of 448 urine samples, representing 153 patients (147 females and 6 males) with interstitial cystitis/bladder pain syndrome, of whom 54 (50 females and 4 males) had Hunner lesions. A total of 159 female and 136 male controls also participated, who were age matched. A defined BP-RS was calculated to predict interstitial cystitis/bladder pain syndrome with Hunner lesions or a bladder permeability defect etiology with 89% validity. Conclusions: In this novel participation crowdsourcing study we obtained a large number of urine samples from 46 states, which were collected at home, shipped and stored at room temperature. Using a machine learning algorithm we developed BP-RS to quantify the risk of interstitial cystitis/bladder pain syndrome with Hunner lesions, which is indicative of a bladder permeability defect etiology. To our knowledge BP-RS is the first validated urine biomarker assay for interstitial cystitis/bladder pain syndrome and one of the first biomarker assays to be developed using crowdsourcing.

Chang HJ, Lin FY, Lee SE, Andreini D, Bax J, Cademartiri F, **Chinnaiyan K**, Chow BJW, Conte E, Cury RC, Feuchtner G, Hadamitzky M, Kim YJ, Leipsic J, Maffei E, Marques H, Plank F, Pontone G, **Raff GL**, van Rosendaal AR, Villines TC, Weirich HG, Al'Aref SJ, Baskaran L, Cho I, Danad I, Han D, Heo R, Lee JH, Rivzi A, Stuijzand WJ, Gransar H, Lu Y, Sung JM, Park HB, Berman DS, Budoff MJ, Samady H, Shaw LJ, Stone PH, Virmani R, Narula J and Min JK (2018). "Coronary atherosclerotic precursors of acute coronary syndromes." Journal of the American College of Cardiology 71(22): 2511-2522.

[Full Text](#)

Department of Internal Medicine

Department of Radiation Oncology

Background: The association of atherosclerotic features with first acute coronary syndromes (ACS) has not accounted for plaque burden. Objectives: The purpose of this study was to identify atherosclerotic features associated with precursors of ACS. Methods: We performed a nested case-control study within a cohort of 25,251 patients undergoing coronary computed tomographic angiography (CTA) with follow-up over 3.4 ± 2.1 years. Patients with ACS and nonevent patients with no prior coronary artery disease (CAD) were propensity matched 1:1 for risk factors and coronary CTA-evaluated obstructive ($\geq 50\%$) CAD. Separate core laboratories performed blinded adjudication of ACS and culprit lesions and quantification of baseline coronary CTA for percent diameter stenosis (%DS), percent cross-sectional plaque burden (PB), plaque volumes (PVs) by composition (calcified, fibrous, fibrofatty, and necrotic core), and presence of high-risk plaques (HRPs). Results: We identified 234 ACS and control pairs (age 62 years, 63% male). More than 65% of patients with ACS had nonobstructive CAD at baseline, and 52% had HRP. The %DS, cross-sectional PB, fibrofatty and necrotic core volume, and HRP increased the adjusted hazard ratio (HR) of ACS (1.010 per %DS, 95% confidence interval [CI]: 1.005 to 1.015; 1.008 per percent cross-sectional PB, 95% CI: 1.003 to 1.013; 1.002 per mm³ fibrofatty plaque, 95% CI: 1.000 to 1.003; 1.593 per mm³ necrotic core, 95% CI: 1.219 to 2.082; all $p < 0.05$). Of the 129 culprit lesion precursors identified by coronary CTA, three-fourths exhibited $< 50\%$ stenosis and 31.0% exhibited HRP. Conclusions: Although ACS increases with %DS, most precursors of ACS cases and culprit lesions are nonobstructive. Plaque evaluation, including HRP, PB, and plaque composition, identifies high-risk patients above and beyond stenosis severity and aggregate plaque burden.

Chen S, **Qin A**, Zhou D, John T, Buelow K and **Yan D** (2018). "Deformable image registration performances on registering sequential 18F-FDG PET/CT images obtained from a growing tumor: An animal study." *Medical Physics* 45(6): E344-E345.

Department of Radiation Oncology

Chen S, **Qin A**, Zhou D and Yan D (2018). "Evaluation of U-Net generated MRI Based synthetic CT images for prostate IMRT treatment planning." *Medical Physics* 45(6): E361-E361.

Department of Radiation Oncology

Chen S, Zhou D, Liang J, **Krauss D** and **Yan D** (2018). "Adaptive dose painting by number planning using a novel object of dose prescription function derived from multiple 18F-FDG PET/CT images." *Medical Physics* 45(6): E672-E672.

Department of Radiation Oncology

Chinnaiyan P, Won M, Wen PY, Rojjani AM, Werner-Wasik M, Shih HA, Ashby LS, Michael Yu H-H, Stieber VW, Malone SC, Fiveash JB, Mohile NA, Ahluwalia MS, Wendland MM, Stella PJ, Kee AY and Mehta MP (2018). "A randomized phase II study of everolimus in combination with chemoradiation in newly diagnosed glioblastoma: results of NRG Oncology RTOG 0913." *Neuro-Oncology* 20(5): 666-673.

[Full Text](#)

Department of Radiation Oncology

Background: This phase II study was designed to determine the efficacy of the mammalian target of rapamycin (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 a significant increase in both grade 4 toxicities, including lymphopenia and thrombocytopenia, and treatment-related deaths. There was no significant difference in PFS between patients randomized to everolimus compared with control (median PFS time: 8.2 vs 10.2 mo, respectively; $P = 0.79$). OS for patients randomized to receive everolimus was inferior to that for control patients (median survival time: 16.5 vs 21.2 mo, respectively; $P = 0.008$). A similar trend was

observed in both O6-methylguanine-DNA-methyltransferase promoter hypermethylated and unmethylated tumors. Conclusion: Combining everolimus with conventional chemoradiation leads to increased treatment-related toxicities and does not improve PFS in patients with newly diagnosed glioblastoma. Although the median survival time in patients receiving everolimus was comparable to contemporary studies, it was inferior to the control in this randomized study.

Coustry F, Posey KL, Maerz T, **Baker K**, Abraham AM, Ambrose CG, Nobakhti S, Shefelbine SJ, Bi XH, Newton M, Gawronski K, Remer L, Veerisetty AC, Hossain MG, Chiu F and Hecht JT (2018). "Mutant cartilage oligomeric matrix protein (COMP) compromises bone integrity, joint function and the balance between adipogenesis and osteogenesis." *Matrix Biology* 67: 75-89.

[Full Text](#)

Department of Orthopedic Surgery

Mutations in COMP (cartilage oligomeric matrix protein) cause severe long bone shortening in mice and humans. Previously, we showed that massive accumulation of misfolded COMP in the ER of growth plate chondrocytes in our MT-COMP mouse model of pseudoachondroplasia (PSACH) causes premature chondrocyte death and loss of linear growth. Premature chondrocyte death results from activation of oxidative stress and inflammation through the CHOP-ER pathway and is reduced by removing CHOP or by anti-inflammatory or antioxidant therapies. Although the mutant COMP chondrocyte pathologic mechanism is now recognized, the effect of mutant COMP on bone quality and joint health (laxity) is largely unknown. Applying multiple analytic approaches, we describe a novel mechanism by which the deleterious consequences of mutant COMP retention results in upregulation of miR-223 disturbing the adipogenesis-osteogenesis balance. This results in reduction in bone mineral density, bone quality, mechanical strength and subchondral bone thickness. These, in addition to abnormal patterns of ossification at the ends of the femoral bones likely contribute to precocious osteoarthritis (OA) of the hips and knees in the MT-COMP mouse and PSACH. Moreover, joint laxity is compromised by abnormally thin ligaments. Altogether, these novel findings align with the PSACH phenotype of delayed ossification and bone age, extreme joint laxity and joint erosion, and extend our understanding of the underlying processes that affect bone in PSACH. These results introduce a novel finding that miR-223 is involved in the ossification defect in MT-COMP mice making it a therapeutic target. Published by Elsevier B.V.

Dabrowski E, Bonikowski M, Gormley M, Volteau M, Picaut P and Delgado MR (2018). "AbobotulinumtoxinA efficacy and safety in children with equinus foot previously treated with botulinum toxin." *Pediatric Neurology* 82: 44-49.

[Full Text](#)

Department of Physical Medicine and Rehabilitation

Background: The effects of botulinum toxin are transient, and repeat injections are required in children with lower-limb spasticity. However, the efficacy of botulinum toxin in patients who have received previous injections has remained largely unexplored. Methods: We present subgroup analyses of a phase III study conducted in ambulatory children (aged two to 17) with spastic equinus foot. Patients were randomized to single doses of abobotulinumtoxinA 10 U/kg/leg, 15 U/kg/leg, or placebo injected into the gastrocnemius-soleus complex (one or both legs). The first analysis was prespecified to review the effect of abobotulinumtoxinA in children previously treated with botulinum toxin versus those children new to the treatment; a second post hoc analysis evaluated the effect of abobotulinumtoxinA in children who changed botulinum toxin formulation. Results: Of the 241 randomized patients, 113 had previously received botulinum toxin, including 86 who had been treated with another formulation. In both analyses, muscle tone (Modified Ashworth Scale) and the Physicians Global Assessment, at week 4, improved with abobotulinumtoxinA treatment versus placebo, regardless of baseline botulinum toxin status. Placebo responses in patients new to treatment were consistently higher than in the previously treated group. Conclusions: These results demonstrate similar abobotulinumtoxinA efficacy and safety profiles in children with spasticity who are new to botulinum toxin treatment and those children who were previously treated. The efficacy and safety of abobotulinumtoxinA treatment in these previously treated patients were comparable with the overall trial population, indicating that doses of 10 and 15 U/kg/leg are suitable starting doses for children with spasticity regardless of the previous botulinum toxin preparation used.

Dae M, O'Neill W, Grines C, **Dixon S**, Erlinge D, Noc M, Holzer M and Dee A (2018). "Effects of endovascular cooling

on infarct size in ST-segment elevation myocardial infarction: A patient-level pooled analysis from randomized trials." Journal of Interventional Cardiology 31(3): 269-276.

[Full Text](#)

Department of Internal Medicine

Objectives: This study sought to examine the relationship between temperature at reperfusion and infarct size. Background Hypothermia consistently reduces infarct size when administered prior to reperfusion in animal studies, however, clinical results have been inconsistent. Methods: We performed a patient-level pooled analysis from six randomized control trials of endovascular cooling during primary percutaneous coronary intervention (PCI) for ST-segment elevation myocardial infarction (STEMI) in 629 patients in which infarct size was assessed within 1 month after randomization by either single-photon emission computed tomography (SPECT) or cardiac magnetic resonance imaging (cMR). Results: In anterior infarct patients, after controlling for variability between studies, mean infarct size in controls was 21.3 (95%CI 17.4-25.3) and in patients with hypothermia <35 degrees C it was 14.8 (95%CI 10.1-19.6), which was a statistically significant absolute reduction of 6.5%, or a 30% relative reduction in infarct size (P=0.03). There was no significant difference in infarct size in anterior 35 degrees C, or inferior infarct patients. There was no difference in the incidence of death, ventricular arrhythmias, or re-infarction due to stent thrombosis between hypothermia and control patients. Conclusions: The present study, drawn from a patient-level pooled analysis of six randomized trials of endovascular cooling during primary PCI in STEMI, showed a significant reduction in infarct size in patients with anterior STEMI who were cooled to <35 degrees C at the time of reperfusion. The results support the need for trials in patients with anterior STEMI using more powerful cooling devices to optimize the delivery of hypothermia prior to reperfusion.

Dallo FJ, Ruterbusch JJ, McCullough JR, Sreedhar S, Schwartz K and **Mulhem E** (2018). "Diabetes management among Arab Americans who sought care at a large metropolitan hospital system in Michigan." Journal of Immigrant and Minority Health.

[Full Text](#)

Department of Family Medicine and Community Health

To estimate and compare the management of diabetes among Arab, Asian, non-Hispanic Black, and non-Hispanic Whites attending a large health system in metropolitan Detroit. Data were electronically abstracted for 6622 adult patients with diabetes. Dependent variables were uptake of A1c testing and results, LDL-C testing and results, and eye examination frequency. The independent variable was race/ethnicity. Logistic regression models were used to examine the association between Arab Americans and non-Hispanic Whites for each of the dependent variables while controlling for confounders. Arab Americans were 38% more likely than non-Hispanic Whites to report an A1c > 7% (OR 1.38; 95% CI 1.03, 1.87). Arab Americans were 62% less likely to receive an eye exam compared to non-Hispanic Whites (OR 1.62; 95% CI 1.21, 2.17). Population based studies about diabetes management among Arab Americans will facilitate tailored interventions aimed at preventing/delaying diabetes complications and reducing premature mortality due to diabetes.

Debaets AM (2018). "Miracles for the 'Nones'." American Journal of Bioethics 18(5): 61-62.

[Full Text](#)

Department of Foundational Medical Studies

The article offers information on miracle invokers in justifying health care treatment requests and decisions. Topics discussed include invocations from traditional religious communities, the language of miracles and decision-making and offering care for the patients and their families despite of spiritual and religious values.

Ding X, Chen S, Wang W, **Qin A**, Li X, **Zhou J**, **Krauss D**, **Stevens C**, **Kabolizadeh P** and **Yan D** (2018). "Feasibility of building a deep convolutional neural network for MR image based synthetic-CT for prostate proton planning: A novel method to improve MRI based proton dose calculation accuracy." Medical Physics 45(6): E467-E467.

Department of Radiation Oncology

OUIWB Medical Student Author

Ding X, **Li X**, **Zhou J**, **Stevens C**, Sura K, **Chinnaiyan P**, **Grills I**, Di Y and **Kabolizadeh P** (2018). "Explore the future of of proton hypo-fractionation treatment - Spot-scanning Proton Arc therapy." Radiotherapy and Oncology 127: S491-S492.

[Full Text](#)

*OUWB Medical Student Author
Department of Radiation Oncology*

Dombrowski DM, **Long G**, Studzinski D, **Chan J** and **Brown OW** (2018). "Is routine chest computed tomography scan indicated in all patients with abdominal aortic aneurysm?" *Journal of Vascular Surgery* 67(6): E180-E180.

Department of Surgery

OUWB Medical Student Author

Ducatman BS (2018). "The impact and burden of human papillomavirus– associated disease." *Archives of Pathology & Laboratory Medicine* 142(6): 686-687.

[Full Text](#)

Department of Pathology

Ducatman BS (2018). "The role of human papillomavirus in oropharyngeal squamous cell carcinoma." *Archives of Pathology & Laboratory Medicine* 142(6): 715-718.

[Full Text](#)

Department of Pathology

Context: Human papillomavirus (HPV) is implicated in the development of oropharyngeal squamous cell carcinomas (OPC), particularly those cancers developing in tonsillar tissue. Objectives: To review the prevalence, subtypes, and methods of detecting HPV in OPC and to review the epidemiology, histology, staging, management, and prevention of these cancers. Data Sources: The study comprised a review of the literature. Conclusions: The incidence of HPV-OPC is rising globally and in the United States, but rates of HPV-positivity vary with the anatomic site(s) and the population studied, as well as the method of detecting HPV infection. These tumors are more common in men. In contrast to HPV– OPC, the rates of smoking and alcohol abuse are lower. The HPV 16 subtype is predominant, and immunohistochemistry staining for p16 and in situ hybridization are the most widely used methods clinically to detect transcriptionally active HPV. Moreover, HPV-OPC has a unique tumor phenotype with predominantly nonkeratinizing morphology and a variety of patterns. These cancers often present with cystic lymph node metastases. The prognosis for HPV-OPC is significantly better than HPV– OPC and has led to differences in grading, staging, and management. Although there are similarities to cervical cancer, there are challenges in preventing such cancers.

Edelson GW (2018). "Michael Kleerekoper, MD In Memoriam." *Endocrine Practice* 24(6): 607-607.

Department of Internal Medicine

Farshad S, Keeney S, **Halalau A** and **Ghaith G** (2018). "A case of gastric metastatic melanoma 15 years after the initial diagnosis of cutaneous melanoma." *Case Reports in Gastrointestinal Medicine*: vol. 2018: 7684964.

[Full Text](#)

Department of Internal Medicine

Melanoma is the most common cancer to metastasize to the gastrointestinal tract; however, metastasis to the stomach is a rare occurrence. We present the case of a patient with a history of melanoma of the chest wall 15 years prior to presentation who initially presented to the hospital with sepsis but was later found to have metastatic melanoma in the gastric cardia. This case illustrates the rare occurrence of metastatic melanoma to the stomach which occurred 15 years after the initial skin diagnosis of melanoma was made, its endoscopic appearance, and how the nonspecific symptoms frequently lead to a delayed diagnosis or one that is not made at all until after autopsy. For these reasons, endoscopy should be promptly performed if there is a suspicion of gastrointestinal metastatic melanoma.

Fischgrund JS, Rhyne A, Franke J, Sasso R, Kitchel S, Bae H, Yeung C, Truumees E, Schaufele M, Yuan P, Vajkoczy P, DePalma M, Anderson DG, Thibodeau L and Meyer B (2018). "Intraosseous basivertebral nerve ablation for the treatment of chronic low back pain: a prospective randomized double-blind sham-controlled multi-center study." *European Spine Journal* 27(5): 1146-1156.

[Full Text](#)

Department of Orthopedic Surgery

To evaluate the safety and efficacy of radiofrequency (RF) ablation of the basivertebral nerve (BVN) for the treatment of chronic low back pain (CLBP) in a Food and Drug Administration approved Investigational Device Exemption trial. The BVN has been shown to innervate endplate nociceptors which are thought to be a source of CLBP.

Fisher A, Khanal P, Gniado E, Khaddour L, Orosey M, **Hader I**, Yadav S and **Halalau A** (2018). "A retrospective study analyzing the appropriateness of initial treatment of clostridium difficile in patients with active malignancy." *Gastroenterology Research & Practice* Article ID 7192728: 1-8.

[Full Text](#)

Department of Internal Medicine

Background: Clostridium difficile infection (CDI) is the leading cause of hospital-associated gastrointestinal illness. Previous studies reported that patients with active malignancy are at high risk for CDIs, and yet they are still classified as nonsevere CDI and initially treated with metronidazole. Our aim is to investigate the need for the escalation of antibiotic therapy in patients with CDI and active cancer treated with oral metronidazole versus oral vancomycin. Methods: This is a retrospective study of adult patients admitted with CDI and any underlying active malignancy at Beaumont Hospital, Royal Oak, Michigan, from January 2008 to December 2014. Inclusion criteria included age > 18 years old, polymerase chain reaction- (PCR-) proven CDI, and active malignancy. Results: 197 patients were included in the final analysis. 44.8% of the metronidazole group required escalation of therapy compared to 15.2% in the vancomycin group (p value = 0.001). 29.8% of the combination group (metronidazole and vancomycin) underwent deescalation of antibiotics, which was significantly higher compared to 2.2% of patients in the vancomycin group (p value < 0.001). Discussion: Our results support the initial use of vancomycin or a combination (metronidazole and vancomycin) versus metronidazole in patients with CDI and active malignancy.

Forster R, Cho BCJ, **Fahim DK**, Gerszten PC, Flickinger JC, **Grills IS**, **Jawad MS**, Kersh CR, Letourneau D, Mantel F, Sahgal A, Shin JH, Winey BA and Guckenberger M (2018). "Histopathological findings after irradiation and re-irradiation of spinal bone metastases with SBRT." *Strahlentherapie Und Onkologie* 194: S181-S181.

[Full Text](#)

Department of Neurosurgery

Department of Radiation Oncology

Foster CC, Melotek JM, **Brisson RJ**, Seiwert TY, Cohen EEW, Stenson KM, Blair EA, Portugal L, Gooi Z, Agrawal N, Vokes EE and Haraf DJ (2018). "Definitive chemoradiation for locally-advanced oral cavity cancer: A 20-year experience." *Oral Oncology* 80: 16-22.

[Full Text](#)

OUWB Medical Student Author

Objectives: Definitive chemoradiation (CRT) for oral cavity squamous cell carcinoma (OC-SCC) is often criticized for poor efficacy or toxicity. We describe a favorable 20-year experience of primary CRT for locally-advanced OC-SCC. Materials and Methods: Patients with locally-advanced, stage III/IV OC-SCC receiving primary concomitant CRT on protocols from 1994 to 2014 were analyzed. Chemotherapy included fluorouracil and hydroxyurea with other third agents. Radiotherapy (RT) was delivered once or twice daily to a maximum dose of 70–75 Gy. Intensity-modulated RT (IMRT) was exclusively used after 2004. Progression-free survival (PFS), overall survival (OS), locoregional control (LRC), and distant control (DC) were calculated by the Kaplan-Meier method and compared across treatment decades using the log-rank test. Rates of osteoradionecrosis (ORN) requiring surgery were compared across treatment decades using the Chi-square test. Results: 140 patients with locally-advanced OC-SCC were treated with definitive CRT. Of these, 75.7% had T3/T4 disease, 68.6% had ≥N2 nodal disease, and 91.4% had stage IV disease. Most common primary sites were oral tongue (47.9%) and floor of mouth (24.3%). Median follow-up was 5.7 years. Five-year OS, PFS, LRC, and DC were 63.2%, 58.7%, 78.6%, and 87.2%, respectively. Rates of ORN and long-term feeding tube dependence were 20.7% and 10.0%, respectively. Differences in LRC (P = 0.90), DC (P = 0.24), PFS (P = 0.38), OS (P = 0.10), or ORN (P = 0.38) were not significant across treatment decades. Conclusion: Definitive CRT is a viable and feasible strategy for organ preservation for patients with locally-advanced OC-SCC.

Goldstein JA (2018). "Coronary CT angiography: identification of patients and plaques "at risk"." Journal of the American College of Cardiology 71(22): 2523-2526.

[Request Form](#)

Department of Internal Medicine

Gordon BS, Keogh M, Davidson Z, Griffiths S, Sharma V, Marin D, Mayer SA and Dangayach NS (2018). "Addressing spirituality during critical illness: A review of current literature." Journal of Critical Care 45: 76-81.

[Full Text](#)

OUIWB Medical Student Author

Objectives: The purpose of this review is to provide an overview of research on spirituality and religiosity in the intensive care setting that has been published since the 2004–2005 American College of Critical Care Medicine (ACCM) Clinical Practice Guidelines for the Support of Family in the Patient–Centered Intensive Care Unit with an emphasis on its application beyond palliative and end-of-life care. Materials and Methods: ACCM 2004–2005 guidelines emphasized the importance of spiritual and religious support in the form of four specific recommendations: [1] assessment and incorporation of spiritual needs in ICU care plan; [2] spiritual care training for doctors and nurses; [3] physician review of interdisciplinary spiritual need assessments; and [4] honoring the requests of patients to pray with them. We reviewed 26 studies published from 2006 to 2016 and identified whether studies strengthened the grade of these recommendations. We further categorized findings of these studies to understand the roles of spirituality and religiosity in surrogate perceptions and decision-making and patient and family experience. Conclusions: Spiritual care has an essential role in the treatment of critically ill patients and families. Current literature offers few insights to support clinicians in navigating this often-challenging aspect of patient care and more research is needed.

Habib C, Wang Y, Li L, **Li X**, **Grills I** and Ding X (2018). "Evaluating the dosimetric significance of proton range uncertainty in patients with surgical bone cement." Medical Physics 45(6): E267-E268.

Department of Radiation Oncology

OUIWB Medical Student Author

Haines DE (2018). "Cooking with radiofrequency energy: What is the right recipe?" JACC: Clinical Electrophysiology 4(4): 480-482.

[Full Text](#)

Department of Internal Medicine

Haines DE, Verma A, Kirchhof N, Barka ND, Grassl ED, Howard BT and Stewart MT (2018). "Pulsed field ablation-feasibility of advanced electroporation and comparison to rf." Heart Rhythm 15(5): S143.

[Full Text](#)

Department of Internal Medicine

Background: Reportedly, high voltage DC shocks produce cardiac lesions via electroporation. However, drawbacks include skeletal muscle stimulation, and heat/bubble generation. Objective: Compare radiofrequency ablation (RFA) to pulsed field ablation (PFA) using biphasic, pulsed bipolar electric via a nine-electrode circular array catheter (CAC). Methods: Ablations performed in six pigs with the CAC at the RPV ostium, LAA and RAA were randomized to RFA (2:1 bipolar/unipolar duty cycle, 10 W/electrode max, 60°C, 60 sec), or PFA (4 biphasic trains of 60 pulses, 500V, 100µs pulse width), delivered bipolar to all electrodes. Local electrogram (egm) amplitude and pace capture at 5 V output were tested at each electrode pair after each ablation. Necropsies and histopathology were performed 2 weeks post ablation. Results: PFA delivered from the CAC caused no muscle stimulation. Egm amplitude reduction >50% was seen in 95% of PFA vs 77% RFA lesions (p=0.001), and egm amplitude was reduced to < 0.5mV in 53% PFA vs. 24% RFA (p=0.0003). At sites with pace capture pre-ablation, 92% had loss of capture after RFA vs 100% after PFA (p=0.008). On histology, PFA lesions showed homogeneous fibrosis without endocardial disruption, few lingering sequestered myocytes, and minimal arterial remodeling RFA but not PFA displayed perivascular and endocardial myocyte sparing due to cooling by blood flow and perfusion. Conclusion: PFA was superior to RFA in acute local egm amplitude reduction and loss of pace capture. PFA lesions were more homogeneous, unaffected by convective cooling, and less harmful to intralesion arteries. [Figure Presented].

Hakim S, **Aneese AM**, Edhi A, **Shams C**, **Cannon ME** and **Cappell MS** (2018). "Reduction in length of stay, hospital costs and charges for all-cause ERCPS performed over the weekend versus ERCPS that were postponed to the first available weekday." [Gastrointestinal Endoscopy](#) 87(6): AB587-AB588.

[Request Form](#)

OUWB Medical Student Author

Department of Internal Medicine

Hakim S, **Davila F**, Amin M, Hader I and **Cappell MS** (2018). "Infectious aortitis: A life-threatening endovascular complication of nontyphoidal salmonella bacteremia." [Case Reports in Medicine](#) Article ID 6845617: 1-5.

[Full Text](#)

Department of Internal Medicine

Department of Pathology

A 65-year-old Japanese man living in the United States presented with pyrexia and chills associated with intermittent lower abdominal and back pain for 5 days. He denied recent travel, rash, diarrhea, or rectal bleeding. Physical examination revealed spiking pyrexia, and routine laboratory tests revealed mild leukocytosis and neutrophilia. Abdominal CT with contrast showed findings highly compatible with aortitis. Comprehensive autoimmune evaluation was negative. *Salmonella enterica* serotype Enteritidis was isolated from blood cultures. IV antibiotics were administered, but the patient continued to experience low-grade pyrexia and mild leukocytosis, and follow-up abdominal CT showed progressive aortic inflammation. The patient therefore underwent resection of the affected aortic segment with in-situ graft replacement and lifelong suppressive antibiotics. The patient is asymptomatic with no complications at 18 weeks of follow-up. This case report illustrates that patients with infectious aortitis from nontyphoidal *Salmonella* may (1) present with nonspecific and nonlocalizing symptoms and signs except for sepsis; (2) have diagnostic blood cultures and abdominal CT findings; and (3) typically require aggressive, prolonged IV antibiotic therapy and surgery for potential cure of this life-threatening infection.

Halalau A, **Aneese AM** and **Nasr J** (2018). "The assessment of an evidence based medicine curriculum intergration into an internal medicine residency program." [Journal of General Internal Medicine](#) 33: S738-S738.

Department of Internal Medicine

OUWB Medical Student Author

Hall WA, Bergom C, Thompson RF, Baschnagel AM, Vijayakumar S, Willers H, Li XA, Schultz CJ, **Wilson GD**, West CML, Capala J, Coleman CN, Torres-Roca JF, Weidhaas J and Feng FY (2018). "Precision oncology and genomically guided radiation therapy: A report from the American Society for Radiation Oncology/American Association of Physicists in Medicine/National Cancer Institute Precision Medicine Conference." [International Journal of Radiation Oncology Biology Physics](#) 101(2): 274-284.

[Full Text](#)

Department of Radiation Oncology

Purpose: To summarize important talking points from a 2016 symposium focusing on real-world challenges to advancing precision medicine in radiation oncology, and to help radiation oncologists navigate the practical challenges of precision, radiation oncology. Methods and Materials: The American Society for Radiation Oncology, American Association of Physicists in Medicine, and National Cancer Institute cosponsored a meeting on precision medicine in radiation oncology. In June 2016 numerous scientists, clinicians, and physicists convened at the National Institutes of Health to discuss challenges and future directions toward personalized radiation therapy. Various breakout sessions were held to discuss particular components and approaches to the implementation of personalized radiation oncology. This article summarizes the genomically guided radiation therapy breakout session. Results: A summary of existing genomic data enabling personalized radiation therapy, ongoing clinical trials, current challenges, and future directions was collected. The group attempted to provide both a current overview of data that radiation oncologists could use to personalize therapy, along with data that are anticipated in the coming years. It seems apparent from the provided review that a considerable opportunity exists to truly bring genomically guided radiation therapy into clinical reality. Conclusions: Genomically guided radiation therapy is a necessity that must be embraced in the coming years. Incorporating these data into treatment recommendations will

provide radiation oncologists with a substantial opportunity to improve outcomes for numerous cancer patients. More research focused on this topic is needed to bring genomic signatures into routine standard of care. © 2017

Han D, Hartaigh BÓ, Gransar H, Lee JH, Rizvi A, Baskaran L, Schulman-Marcus J, Dunning A, Achenbach S, Al-Mallah MH, Berman DS, Budoff MJ, Cademartiri F, Maffei E, Callister TQ, **Chinnaiyan K**, Chow BJW, DeLago A, Hadamitzky M, Hausleiter J, Kaufmann PA, Raff G, Shaw LJ, Villines TC, Kim Y-J, Leipsic J, Feuchtner G, Cury RC, Pontone G, Andreini D, Marques H, Rubinshtein R, Hindoyan N, Jones EC, Gomez M, Lin FY, Chang H-J and Min JK (2018). "Incremental prognostic value of coronary computed tomography angiography over coronary calcium scoring for major adverse cardiac events in elderly asymptomatic individuals." European Heart Journal Cardiovascular Imaging 19(6): 675-683.

[Full Text](#)

Department of Internal Medicine

Aims: Coronary computed tomography angiography (CCTA) and coronary artery calcium score (CACs) have prognostic value for coronary artery disease (CAD) events beyond traditional risk assessment. Age is a risk factor with very high weight and little is known regarding the incremental value of CCTA over CAC for predicting cardiac events in older adults. Methods and Results: Of 27 125 individuals undergoing CCTA, a total of 3145 asymptomatic adults were identified. This study sample was categorized according to tertiles of age (cut-off points: 52 and 62 years). CAD severity was classified as 0, 1-49, and $\geq 50\%$ maximal stenosis in CCTA, and further categorized according to number of vessels $\geq 50\%$ stenosis. The Framingham 10-year risk score (FRS) and CACS were employed as major covariates. Major adverse cardiovascular events (MACE) were defined as a composite of all-cause death or non-fatal MI. During a median follow-up of 26 months (interquartile range: 18-41 months), 59 (1.9%) MACE occurred. For patients in the top age tertile, CCTA improved discrimination beyond a model included FRS and CACS (C-statistic: 0.75 vs. 0.70, P-value = 0.015). Likewise, the addition of CCTA improved category-free net reclassification (cNRI) of MACE in patients within the highest age tertile (e.g. cNRI = 0.75; proportion of events/non-events reclassified were 50 and 25%, respectively; P-value <0.05, all). CCTA displayed no incremental benefit beyond FRS and CACS for prediction of MACE in the lower age tertiles. Conclusion: CCTA provides added prognostic value beyond cardiac risk factors and CACS for the prediction of MACE in asymptomatic older adults.

Hastings C and **Gowans LK** (2018). "Heterogeneity in school re-entry programs for children returning to school following treatment for cancer." Pediatric Blood & Cancer 65: 1.

OUWB Medical Student Author

Department of Pediatrics

Hirshfeld JW, Ferrari VA, Bengel FM, Bergersen L, Chambers CE, Einstein AJ, Eisenberg MJ, Fogel MA, Gerber TC, **Haines DE**, Laskey WK, Limacher MC, Nichols KJ, Pryma DA, **Raff GL**, Rubin GD, Smith D, Stillman AE, Thomas SA, Tsai TT, Wagner LK, Wann LS and Consensus ACCTFE (2018). "2018 ACC/HRS/NASCI/SCAI/SCCT expert consensus document on optimal use of ionizing radiation in cardiovascular imaging—best practices for safety and effectiveness, part 1: Radiation physics and radiation biology a report of the American College of Cardiology Task Force on Expert Consensus Decision Pathways." Journal of the American College of Cardiology 71(24): 2811-2828.

[Full Text](#)

Department of Internal Medicine

The stimulus to create this document was the recognition that ionizing radiation-guided cardiovascular procedures are being performed with increasing frequency, leading to greater patient radiation exposure and, potentially, to greater exposure for clinical personnel. Although the clinical benefit of these procedures is substantial, there is concern about the implications of medical radiation exposure. The American College of Cardiology leadership concluded that it is important to provide practitioners with an educational resource that assembles and interprets the current radiation knowledge base relevant to cardiovascular procedures. By applying this knowledge base, cardiovascular practitioners will be able to select procedures optimally, and minimize radiation exposure to patients and to clinical personnel. Optimal Use of Ionizing Radiation in Cardiovascular Imaging: Best Practices for Safety and Effectiveness is a comprehensive overview of ionizing radiation use in cardiovascular procedures and is published online. To provide the most value to our members, we divided the print version of this document into 2 focused parts. Part I: Radiation Physics and Radiation Biology addresses the issue of medical radiation exposure, the basics of radiation physics and

dosimetry, and the basics of radiation biology and radiation-induced adverse effects. Part II: Radiological Equipment Operation, Dose-Sparing Methodologies, Patient and Medical Personnel Protection covers the basics of operation and radiation delivery for the 3 cardiovascular imaging modalities (x-ray fluoroscopy, x-ray computed tomography, and nuclear scintigraphy).

Hlubocky J, Bhavnagri S, **Swinford A, Mitri C, Rebner M** and **Pai V** (2018). "Does the use of pretreatment MRI change the management of patients with newly diagnosed breast cancer?" The Breast Journal 24(3): 309-313.

[Full Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Abstract 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.

Hsu MR, Haleem MS and Hsu W (2018). "3D printing applications in minimally invasive spine surgery." Minimally Invasive Surgery 2018: 4760769-4760769.

[Full Text](#)

OUWB Medical Student Author

3D printing (3DP) technology continues to gain popularity among medical specialties as a useful tool to improve patient care. The field of spine surgery is one discipline that has utilized this; however, information regarding the use of 3DP in minimally invasive spine surgery (MISS) is limited. 3D printing is currently being utilized in spine surgery to create biomodels, hardware templates and guides, and implants. Minimally invasive spine surgeons have begun to adopt 3DP technology, specifically with the use of biomodeling to optimize preoperative planning. Factors limiting widespread adoption of 3DP include increased time, cost, and the limited range of diagnoses in which 3DP has thus far been utilized. 3DP technology has become a valuable tool utilized by spine surgeons, and there are limitless directions in which this technology can be applied to minimally invasive spine surgery.

Hussain M, Tangen CM, Jr IMT, Swanson GP, **Wood DP**, Sakr W, Dawson NA, Haas NB, Flaig TW, Dorff TB, Lin DW, Crawford ED, Quinn DI, Vogelzang NJ and Glode LM (2018). "Phase III intergroup trial of adjuvant androgen deprivation with or without mitoxantrone plus prednisone in patients with high-risk prostate cancer after radical prostatectomy: SWOG S9921." Journal of Clinical Oncology 36(15): 1498-1504.

[Request Form](#)

Department of Urology

Purpose: Patients with high-risk prostate cancer after radical prostatectomy are at risk for death. Adjuvant androgen-deprivation therapy (ADT) may reduce this risk. We hypothesized that the addition of mitoxantrone and prednisone (MP) to adjuvant ADT could reduce mortality compared with adjuvant ADT alone. Methods: Eligible patients had cT1-3N0 prostate cancer with one or more high-risk factors after radical prostatectomy (Gleason score [GS] \geq 8; pT3b, pT4, or pN+ disease; GS 7 and positive margins; or preoperative prostate-specific antigen [PSA] $>$ 15 ng/mL, biopsy GS score $>$ 7, or PSA $>$ 10 ng/mL plus biopsy GS $>$ 6. Patients with PSA \leq 0.2 ng/mL after radical prostatectomy were stratified by pT/N stage, GS, and adjuvant radiation plan and randomly assigned to ADT (bicalutamide and goserelin for 2 years) or ADT plus six cycles of MP. The primary end point was overall survival (OS). Median OS was projected to be 10 years in the ADT arm, requiring 680 patients per arm to detect a hazard ratio of 1.30 with 92% power and

one-sided $\alpha = .05$. Results: Nine hundred sixty-one eligible intent-to-treat patients were randomly assigned to ADT or ADT + MP from October 1999 to January 2007, when the Data Safety Monitoring Committee recommended stopping accrual as a result of higher leukemia incidence with ADT + MP. Median follow-up was 11.2 years. The 10-year OS estimates were 87% with ADT (expected 50%) and 86% with ADT + MP (hazard ratio, 1.06; 95% CI, 0.79 to 1.43). The 10-year estimate for disease-free survival was 72% for both arms. Prostate cancer was the cause of death in 18% of patients in the ADT arm and 22% in the ADT + MP arm. More patients in the MP arm died of other cancers (36% v 18% in ADT alone arm). Conclusion: MP did not improve OS and increased deaths from other malignancies. The DFS and 10-year OS in these patients treated with 2 years of ADT were encouraging compared with historical estimates, although a definitive conclusion regarding value of ADT may not be made without a nontreatment control arm.

Iftikhar H and **Patel VK** (2018). "Unexpected side effect of mirabegron - A medication of overactive bladder." Sleep 41: A409-A409.

Department of Internal Medicine

Iftikhar H, Zhang C, **Grasso-Knight G** and **Dalal BD** (2018). "Asymmetric migrating diffuse alveolar hemorrhage." American Journal of Respiratory and Critical Care Medicine 197: 2.

[Full Text](#)

Department of Internal Medicine

Iftikhar H, Zhang C, Hehar J, **Bozyk PD** and **Nair G** (2018). "Wait it is not a lab error! An uncommon case of serum ammonia level greater than 1000 millimoles per litre and normal hepatic function." American Journal of Respiratory and Critical Care Medicine 197: 2.

Department of Internal Medicine

Iftikhar H, Zhang C, Rodriguez FF and **Nair G** (2018). "Multidrug resistant pathogens in hospitalized interstitial lung disease patients." American Journal of Respiratory and Critical Care Medicine 197: 2.

[Full Text](#)

Department of Internal Medicine

Jae SY, Laukkanen JA, Choi YH and **Franklin BA** (2018). "Association between cardiorespiratory fitness and indices of coronary artery calcification in men." Mayo Clinic Proceedings 93(5): 665-666.

[Full Text](#)

Department of Internal Medicine

Jandali MB (2018). "Safety of intravenous diltiazem in reduced ejection fraction heart failure with rapid atrial fibrillation." Clinical Drug Investigation 38(6): 503-508.

[Request Form](#)

Department of Internal Medicine

Diltiazem is a nondihydropyridine calcium channel blocker that is used to control rapid ventricular response in patients who have atrial fibrillation or flutter. Diltiazem has a negative inotropic effect and may cause hemodynamic decompensation in patients with reduced ejection fraction. This study evaluated outcomes in patients who had low ejection fraction and were treated with diltiazem.

Jayaschandran V, Kwon M, Iftikhar H, **Michel A** and **Dalal BD** (2018). "Risk factors for pulmonary hypertension in patients undergoing peritoneal dialysis." American Journal of Respiratory and Critical Care Medicine 197: 1.

[Full Text](#)

Department of Internal Medicine

OUIWB Medical Student Author

Johnston WK (2018). "Editorial comment on: MRI displays the prostatic cancer anatomy and improves the bundles management before robot-assisted radical prostatectomy by Schiavina et al." Journal of Endourology 32(4): 322-323.

[Request Form](#)

Department of Urology

Kamrava M, Kuske RR, Anderson B, **Chen P**, Hayes J, Quiet C, Wang P-C, Veruttipong D, Snyder M and Demanes DJ (2018). "Outcomes of node-positive breast cancer patients treated with accelerated partial breast irradiation via multicatheter interstitial brachytherapy: The Pooled Registry of Multicatheter Interstitial Sites (PROMIS) experience." [American Journal of Clinical Oncology](#) 41(6): 538-543.

[Full Text](#)

Department of Radiation Oncology

Objectives: To report outcomes for breast-conserving therapy using adjuvant accelerated partial breast irradiation (APBI) with interstitial multicatheter brachytherapy in node-positive compared with node-negative patients. Materials and Methods: From 1992 to 2013, 1351 patients (1369 breast cancers) were treated with breast-conserving surgery and adjuvant APBI using interstitial multicatheter brachytherapy. A total of 907 patients (835 node negative, 59 N1a, and 13 N1mic) had >1 year of data available and nodal status information and are the subject of this analysis. Median age (range) was 59 years old (22 to 90 y). T stage was 90% T1 and ER/PR/Her2 was positive in 87%, 71%, and 7%. Mean number of axillary nodes removed was 12 (SD, 6). Cox multivariate analysis for local/regional control was performed using age, nodal stage, ER/PR/Her2 receptor status, tumor size, grade, margin, and adjuvant chemotherapy/antiestrogen therapy. Results: The mean (SD) follow-up was 7.5 years (4.6). The 5-year actuarial local control (95% confidence interval) in node-negative versus node-positive patients was 96.3% (94.5-97.5) versus 95.8% (87.6-98.6) (P=0.62). The 5-year actuarial regional control in node-negative versus node-positive patients was 98.5% (97.3-99.2) versus 96.7% (87.4-99.2) (P=0.33). The 5-year actuarial freedom from distant metastasis and cause-specific survival were significantly lower in node-positive versus node-negative patients at 92.3% (82.4-96.7) versus 97.8% (96.3-98.7) (P=0.006) and 91.3% (80.2-96.3) versus 98.7% (97.3-99.3) (P=0.0001). Overall survival was not significantly different. On multivariate analysis age 50 years and below, Her2 positive, positive margin status, and not receiving chemotherapy or antiestrogen therapy were associated with a higher risk of local/regional recurrence. Conclusions: Patients who have had an axillary lymph node dissection and limited node-positive disease may be candidates for treatment with APBI. Further research is ultimately needed to better define specific criteria for APBI in node-positive patients.

Kaufman C, Cross M, **Dekhne N**, Devisetty K, Edmonson D, Eladoumikdachi F, Gass J, Graham C, Gold L, Hall W, Hong R, Jones S, Kuske R, Pandya S, Schonholz S, Smith L and Tafra L (2018). "Favorable outcomes with oncoplastic partial breast reconstruction using BioZorb (R): An interim registry report on 662 enrolled patients." [Annals of Surgical Oncology](#) 25: 520-521.

[Full Text](#)

Department of Surgery

Kaufmann C, Barone J, Cross M, **Dekhne N**, Devisetty K, Dilworth J, Edmonson D, Eladoumikdachi F, Gass J, Hong R, Kuske R, Lebovic G, Patton B, Phillips R, Tafra L, Smith A and Smith L (2018). "Use of a 3-D bioabsorbable marker for planning and targeting radiation to the lumpectomy cavity: 3 year results from a registry study." [European Journal of Cancer](#) 92: S76-S76.

Department of Surgery

Kaur H, Muhleman M and **Balon HR** (2018). "Hypertrophic osteoarthropathy on bone scintigraphy." [Journal of Nuclear Medicine Technology](#) 46(2): 147-148.

[Full Text](#)

Department of Diagnostic Radiology and Molecular Imaging

We present the case report of a patient with a history of lung cancer in whom the typical pattern of hypertrophic osteoarthropathy was seen on bone scintigraphy. We discuss the etiologies, pathophysiology, and management of this entity.

Kelekar AK (2018). "Ultrasound education in the preclinical-organ system based physical diagnosis curriculum." [Journal of General Internal Medicine](#) 33: S745-S745.

[Full Text](#)

Department of Internal Medicine

Kennedy A, Cohn M, Coldwell DM, Drooz A, Ehrenwald E, Kaiser A, Nutting CW, Rose SC, Wang EA and **Savin MA** (2018). "Erratum to updated survival outcomes and analysis of long-term survivors from the MORE study on safety and efficacy of radioembolization in patients with unresectable colorectal cancer liver metastases." Journal of Gastrointestinal Oncology 9(2): E13-E14.

[Full Text](#)

Department of Diagnostic Radiation and Molecular Imaging

Kennedy A, Cohn M, Coldwell DM, Drooz A, Ehrenwald E, Kaiser A, Nutting CW, Rose SC, Wang EA and **Savin MA** (2018). "Updated survival outcomes and analysis of long-term survivors from the MORE study on safety and efficacy of radioembolization in patients with unresectable colorectal cancer liver metastases." Journal of Gastrointestinal Oncology 9(2): E13-E14.

Department of Radiology and Molecular Imaging

Kim SH, **Patel N, Thapar K**, Pandurangadu AV and Bahl A (2018). "Isolated proximal greater saphenous vein thrombosis and the risk of propagation to deep vein thrombosis and pulmonary embolism." Vascular Health and Risk Management 14: 129-135.

[Full Text](#)

OUWB Medical Student Author

Department of Emergency Medicine

Objectives: Greater saphenous vein (GSV) thrombosis is concerning due to its close proximity to the deep femoral vein. This study sought to identify the risk of propagation to deep vein thrombosis (DVT) or pulmonary embolism (PE) among patients with isolated proximal GSV superficial thrombosis and describe provider practice patterns related to treatment. Materials and Methods: This is an Institutional Review Board-approved retrospective multi-center study. Patients presented to one of three possible emergency departments in a large health system. About 21,716 patients were queried through the electronic medical record. Ninety-five patients or 0.4% of study subjects met inclusion criteria of isolated proximal GSV thrombosis. Forty-five patients were excluded, leaving a final data set of 40 patients. Investigators recorded radiology impressions, patient demographics, past medical history, DVT/PE risk factors, and treatment plans. Propagation of GSV thrombosis to DVT/PE was also noted. Follow-up methods included chart review, primary care physician follow-up, and direct, scripted patient follow-up phone calls. Descriptive statistics were applied to study subjects using SAS for Windows, version 9.3. Results: Three patients (7.5%) had progression of GSV thrombosis to DVT/PE. Twenty percent of patients without malignancy were treated with anticoagulation compared to 14% of those with preexisting malignancy upon initial diagnosis of isolated GSV thrombosis. Forty-five percent of patients were prescribed some type of supportive therapy to aid in the treatment of GSV thrombosis. Conclusion: Isolated proximal GSV thrombosis, while uncommon, may frequently progress to DVT or PE. Our work suggests clinicians should consider anticoagulation for isolated GSV thrombosis.

Kim SJ, Peter Campbell J, Kalpathy-Cramer J, Ostmo S, Jonas KE, Choi D, Paul Chan RV, Chiang MF, Sonmez K, Horowitz J, Coki O, Eccles CA, Sarna L, Orlin A, Berrocal A, Negron C, **Drenser K**, Cumming K, Osentoski T, Check T, Zajechowski M, Lee T, Kruger E, McGovern K, Simmons C, Murthy R, Galvis S, Rotter J, Chen I, Li X, Taylor K, Roll K, Erdogmus D, Ioannidis S, Martinez-Castellanos MA, Salinas-Longoria S, Romero R, Arriola A, Olguin-Manriquez F, Meraz-Gutierrez M, Dulanto-Reinoso CM and Montero-Mendoza C (2018). "Accuracy and reliability of eye-based vs quadrant-based diagnosis of plus disease in retinopathy of prematurity." JAMA Ophthalmology 136(6): 648-655.

[Full Text](#)

Department of Ophthalmology

Importance: Presence of plus disease in retinopathy of prematurity is the most critical element in identifying treatment-requiring disease. However, there is significant variability in plus disease diagnosis. In particular, plus disease has been defined as 2 or more quadrants of vascular abnormality, and it is not clear whether it is more reliably and accurately diagnosed by eye-based assessment of overall retinal appearance or by quadrant-based assessment combining grades of 4 individual quadrants. Objective: To compare eye-based vs quadrant-based diagnosis of plus disease and to provide insight for ophthalmologists about the diagnostic process. Design, Setting, and Participants: In this multicenter cohort study, we developed a

database of 197 wide-angle retinal images from 141 preterm infants from neonatal intensive care units at 9 academic institutions (enrolled from July 2011 to December 2016). Each image was assigned a reference standard diagnosis based on consensus image-based and clinical diagnosis. Data analysis was performed from February 2017 to September 2017. Interventions: Six graders independently diagnosed each of the 4 quadrants (cropped images) of the 197 eyes (quadrant-based diagnosis) as well as the entire image (eye-based diagnosis). Images were displayed individually, in random order. Quadrant-based diagnosis of plus disease was made when 2 or more quadrants were diagnosed as indicating plus disease by combining grades of individual quadrants post hoc. Main Outcomes and Measures: Intra-grader and inter-grader reliability (absolute agreement and κ statistic) and accuracy compared with the reference standard diagnosis. RESULTS Of the 141 included preterm infants, 65 (46.1%) were female and 116 (82.3%) white, and the mean (SD) gestational age was 27.0 (2.6) weeks. There was variable agreement between eye-based and quadrant-based diagnosis among the 6 graders (Cohen κ range, 0.32-0.75). Four graders showed underdiagnosis of plus disease with quadrant-based diagnosis compared with eye-based diagnosis (by McNemar test). Inter-grader agreement of quadrant-based diagnosis was lower than that of eye-based diagnosis (Fleiss κ , 0.75 [95% CI, 0.71-0.78] vs 0.55 [95% CI, 0.51-0.59]). The accuracy of eye-based diagnosis compared with the reference standard diagnosis was substantial to near-perfect, whereas that of quadrant-based plus disease diagnosis was only moderate to substantial for each grader. Conclusions and Relevance: Graders had lower reliability and accuracy using quadrant-based diagnosis combining grades of individual quadrants than with eye-based diagnosis, suggesting that eye-based diagnosis has advantages over quadrant-based diagnosis. This has implications for more precise definitions of plus disease regarding the criterion of 2 or more quadrants, clinical care, computer-based image analysis, and education for all ophthalmologists who manage retinopathy of prematurity.

Kim SK, Friedman P, **Madan I**, Haltigin C, **Awrow M** and Ogunyemi D (2018). "Term meconium stained amniotic fluid: Maternal and neonatal risks." [Obstetrics and Gynecology](#) 131: 157S-157S.

Department of Obstetrics and Gynecology

OUIW Medical Student Author

Klein R and **Patel V** (2018). "Chronic hemoptysis: Manifestation of a rare, obscure, and fatal diagnosis." [American Journal of Respiratory and Critical Care Medicine](#) 197: 2.

[Full Text](#)

Department of Internal Medicine

Lauter CB and Koppisetty S (2018). "Recurrent idiopathic anaphylaxis in a woman after suspected food poisoning." [Infectious Diseases in Clinical Practice](#) 26(3): 138-140.

[Full Text](#)

Department of Internal Medicine

Rationale: Recurrent idiopathic anaphylaxis represents a vexing clinical problem associated with stress for patients and allergists. The cause is often not identified despite exhaustive testing. Methods: The history of a 54-year old woman with repeated bouts of unexplained anaphylaxis is reviewed. The relationship between preceding or active infection (emphasis on gastrointestinal infections) and chronic idiopathic urticaria and anaphylaxis was explored by electronic media search (PubMed, Google) and review of reference lists of published articles. The literature on the relationship of *Campylobacter jejuni* infection and urticaria is reviewed. Gastrointestinal infections (*Giardia*, *Anisakis*) have been better documented in such patients. Results The patient had persistent flatulence, and looser and more frequent bowel movements for months after recovery from a bout of food poisoning. A diagnosis of "postinfectious irritable bowel syndrome" was made by a gastroenterologist. These symptoms were not related to her simultaneous diagnosis of chronic idiopathic urticaria and idiopathic anaphylaxis. After treatment with azithromycin (positive stool culture for *C. jejuni*), she had a systemic allergic reaction. Subsequently, the diarrhea and urticaria/anaphylaxis cleared. *C. jejuni* has been reported to cause chronic urticaria, but predominantly in children. A related organism, *Helicobacter pylori*, has been associated with chronic idiopathic urticaria. Anaphylaxis has not been related to *Campylobacter* infection in the past. Conclusions: Urticaria and recurrent bouts of mild unexplained anaphylaxis were triggered by *C. jejuni* infection. The allergic and gastrointestinal symptoms resolved after antibiotic treatment. Gastrointestinal (and other) infections should be looked for in patients with urticaria or

anaphylaxis

Lee JH, Han D, Hartaigh BO, Gransar H, Lu Y, Rizvi A, Park MW, Roudsari HM, Stuijzand WJ, Berman DS, Callister TQ, DeLago A, Hadamitzky M, Hausleiter J, Al-Mallah MH, Budoff MJ, Kaufmann PA, **Raff G, Chinnaiyan K**, Cademartiri F, Maffei E, Villines TC, Kim YJ, Leipsic J, Feuchtner G, Pontone G, Andreini D, Marques H, Rubinshtein R, Achenbach S, Shaw LJ, Chang HJ, Bax J, Chow B, Cury RC, Gomez M, Jones EC, Lin FY, Min JK and Pena JM (2018). "Influence of symptom typicality for predicting MACE in patients without obstructive coronary artery disease: From the CONFIRM Registry (Coronary Computed Tomography Angiography Evaluation for Clinical Outcomes: An International Multicenter Registry)." Clinical Cardiology 41(5): 586-593.

[Full Text](#)

Department of Internal Medicine

Our objective was to assess the prognostic value of symptom typicality in patients without obstructive coronary artery disease (CAD), determined by coronary computed tomographic angiography (CCTA). We identified 4215 patients without prior history of CAD and without obstructive CAD (<50% CCTA stenosis). CAD severity was categorized as nonobstructive (1%-49%) and none (0%). Based upon the Diamond-Forrester criteria for angina pectoris, symptom typicality was classified as asymptomatic, nonanginal, atypical, and typical. Multivariable Cox proportional hazards models were used to assess the risk of major adverse cardiac events (MACE), comprising all-cause mortality, myocardial infarction, unstable angina, and late revascularization, according to symptom typicality. Mean patient age was 57.0 +/- 12.0 years (54.9% male). During a median follow-up of 5.3 years (interquartile range, 4.6-5.9 years), MACE were reported in 312 (7.4%) patients. Among patients with nonobstructive CAD, there was an association between symptom typicality and MACE (P for interaction=0.05), driven by increased risk of MACE among those with typical angina and nonobstructive CAD (hazard ratio: 1.62, 95% confidence interval: 1.06-2.48, P=0.03). No consistent relationship was found between symptom typicality and MACE among patients without any CAD (hazard ratio: 0.73, 95% confidence interval: 0.34-1.57, P=0.08). In the CONFIRM registry, patients who presented with concomitant typical angina and nonobstructive CAD had a higher rate of MACE than did asymptomatic patients with nonobstructive CAD. However, the presence of typical angina did not appear to portend worse prognosis in patients with no CAD.

Jerma EV, Sparks MA and **Topf JM** (2018). "Preface." Nephrology Secrets: Fourth Edition. Elsevier. pp: 632.

[Full Text](#)

Department of Internal Medicine

Leviton A, Hooper SR, Hunter SJ, Scott MN, Allred EN, Joseph RM, O'Shea TM, Kuban K, Ware J, Coster T, Henson B, Wilson R, McGhee K, Lee P, Asgarian A, Sadhwani A, Perrin E, Neger E, Mattern K, Walkowiak J, Barron S, Frazier J, Venuti L, Powers B, Foley A, Dessureau B, Wood M, Damon-Minow J, Ehrenkranz R, Benjamin J, Romano E, Tsatsanis K, Chawarska K, Kim S, Dieterich S, Bearrs K, O'Shea TM, Peters N, Brown P, Ansusinha E, Waldrep E, Friedman J, Hounshell G, Allred D, Engelke SC, Darden-Saad N, Stainback G, Warner D, Wereszczak J, Bernhardt J, McKeeman J, Meyer E, Pastyrnak S, Burdo-Hartman W, Rathbun J, Nota S, Crumb T, Lenski M, Weiland D, Lloyd M, Hunter S, Msall M, Ramoskaite R, Wiggins S, Washington K, Martin R, Prendergast B, Scott M, **Klarr J**, Kring B, DeRidder J and Vogt K (2018). "Antecedents of screening positive for attention deficit hyperactivity disorder in ten-year-old children born extremely preterm." Pediatric Neurology 81: 25-30.

[Full Text](#)

Department of Pediatrics

Background: The incidence of attention deficit hyperactivity disorder is higher among children born very preterm than among children who are mature at birth. Methods: We studied 583 ten-year-old children who were born before 28 weeks of gestation whose IQ was above 84 and had a parent-completed Child Symptom Inventory-4, which allowed classification of the child as having or not having symptoms of attention deficit hyperactivity disorder. For 422 children, we also had a teacher report, and for 583 children, we also had a parent report of whether or not a physician made an attention deficit hyperactivity disorder diagnosis. Results The risk profile of screening positive for attention deficit hyperactivity disorder based on a parent's report differed from the risk profile based on the teacher's report, whereas the risk profile according to a physician and according to any two observers closely resembled the parent-reported profile. Among the statistically significant risk factors were young maternal age (parent, physician, and two observers), maternal

obesity (parent, physician, and two observers), maternal smoking (parent, physician, and two observers), magnesium given at delivery for seizure prophylaxis (parent and two observers), recovery of Mycoplasma sp. from the placenta (teacher and two observers), low gestational age (parent and two observers), low birth weight (teacher and physician), singleton (parent, physician, and two observers), male (parent, teacher, physician, and two observers), mechanical ventilation on postnatal day seven (physician), receipt of a sedative (parent and two observers), retinopathy of prematurity (parent), necrotizing enterocolitis (physician), antibiotic receipt (physician and two observers), and ventriculomegaly on brain scan (parent and two observers). Conclusions: The multiplicity of risk factors identified can be subsumed as components of four broad themes: low socioeconomic state, immaturity or vulnerability, inflammation, and epigenetic phenomena.

Li X, Kabolizadeh P, Zhou J, Yan D, Stevens C, Guerrero T, Grills I and Ding X (2018). "Spot scanning arc therapy for lung cancer: dosimetric improvement and interplay effect mitigation." Radiotherapy and Oncology 127: S316-S317.

[Full Text](#)

Department of Radiation Oncology

Liang J, **Zhou J, Grills I**, Liu Q and **Yan D** (2018). "Correlation of intrafraction KV frames with VMAT beams MU for hypo-lung cancer treatment." Medical Physics 45(6): E487-E487.

Department of Radiation Oncology

Lohasammakul S, Turbpaiboon C, Ratanalekha R, Lohsiriwat V, **Chaiyasate K**, Roham A and Chuangsuwanich A (2018). "Anatomy of superficial inferior epigastric vessels: revival of superficial inferior epigastric (SIEA) flap." European Journal of Plastic Surgery 41(3): 317-324.

[Full Text](#)

Department of Surgery

Background: Development of perforator flaps evolves the perspective of reconstructive surgery to another level due to many of their advantages over the pedicled flaps, particularly lower donor-site morbidity and versatility in flap design. Superficial inferior epigastric artery (SIEA) flap offers this significant advantage over other lower abdominal flaps, as dissection of the rectus abdominis muscle is not required. However, both vascular agenesis and inappropriate vessel size for anastomosis are the major limitations. This study was therefore aimed to investigate these aspects of this flap. Methods: Twenty cadavers were dissected bilaterally to demonstrate vascular anatomy of these vessels. The SIEA of each cadaver was dissected and traced from the origin (femoral arteries) to their presence in the subcutaneous layer. Originating patterns of these vessels, whether sharing a common trunk with other vessels such as superficial circumflex iliac (SCI) or superficial external pudendal (SEP) arteries, was determined and their diameters measured. Results: SIEA agenesis rate was found to be 7.5% (3/40). The diameters greater than 1 and 1.5 mm were found in 86% (32/37) and 30% (11/37), respectively. The distance between its origin and point of entering Scarpa's fascia varies from 10.29 to 62.62 mm (mean 37.48 mm). As opposed to the artery, the superficial inferior epigastric vein was found to be present in all dissections with a diameter ranging from 2.12 to 5 mm (mean 3.09 mm) and the distance, as measured in SIEA, ranging from 20.1 to 74.28 mm (mean 41.24 mm). SIEA usually crosses the inguinal ligament within area between mid-inguinal point and 3 cm medially. Correlations were found (1) between SIEA diameter and pedicle length and (2) between bilateral pedicle lengths of both artery and vein. Conclusions: The high prevalence of both SIEA presence and appropriate diameter for anastomosis, and thus flap success, makes the SIEA perforator flap an appropriate option for reconstructive treatment. Level of Evidence: not ratable. © 2017, Springer-Verlag GmbH Germany.

Lu Y, **Kamel-El Sayed SA**, Wang K, Tiede-Lewis LM, Grillo MA, Veno PA, Dusevich V, Phillips CL, Bonewald LF and Dallas SL (2018). "Live imaging of type I collagen assembly dynamics in osteoblasts stably expressing GFP and mCherry-tagged collagen constructs." Journal of Bone and Mineral Research 33(6): 1166-1182.

[Full Text](#)

Department of Foundational Medical Studies

Type I collagen is the most abundant extracellular matrix protein in bone and other connective tissues and plays key roles in normal and pathological bone formation as well as in connective tissue disorders and fibrosis. Although much is known about the collagen biosynthetic pathway and its regulatory steps, the

mechanisms by which it is assembled extracellularly are less clear. We have generated GFPtpz and mCherry-tagged collagen fusion constructs for live imaging of type I collagen assembly by replacing the $\alpha 2(I)$ -procollagen N-terminal propeptide with GFPtpz or mCherry. These novel imaging probes were stably transfected into MLO-A5 osteoblast-like cells and fibronectin-null mouse embryonic fibroblasts (FN-null-MEFs) and used for imaging type I collagen assembly dynamics and its dependence on fibronectin. Both fusion proteins co-precipitated with $\alpha 1(I)$ -collagen and remained intracellular without ascorbate but were assembled into $\alpha 1(I)$ collagen-containing extracellular fibrils in the presence of ascorbate. Immunogold-EM confirmed their ultrastructural localization in banded collagen fibrils. Live cell imaging in stably transfected MLO-A5 cells revealed the highly dynamic nature of collagen assembly and showed that during assembly the fibril networks are continually stretched and contracted due to the underlying cell motion. We also observed that cell-generated forces can physically reshape the collagen fibrils. Using co-cultures of mCherry- and GFPtpz-collagen expressing cells, we show that multiple cells contribute collagen to form collagen fiber bundles. Immuno-EM further showed that individual collagen fibrils can receive contributions of collagen from more than one cell. Live cell imaging in FN-null-MEFs expressing GFPtpz-collagen showed that collagen assembly was both dependent upon and dynamically integrated with fibronectin assembly. These GFP-collagen fusion constructs provide a powerful tool for imaging collagen in living cells and have revealed novel and fundamental insights into the dynamic mechanisms for the extracellular assembly of collagen. © 2018 American Society for Bone and Mineral Research.

Lynch A and **Zalesin KC** (2018). "Locus of control and weight loss after bariatric surgery for obesity." [Annals of Behavioral Medicine](#) 52: S793-S793.

Department of Internal Medicine

Maerz T, Newton M, Marek AA, Planalp M and **Baker K** (2018). "Dynamic adaptation of vertebral endplate and trabecular bone following annular injury in a rat model of degenerative disc disease." [The Spine Journal](#).

[Full Text](#)

Department of Orthopedic Surgery

Background/Context: Degenerative disc disease (DDD) is associated with longitudinal remodeling of paravertebral tissues. While chronic vertebral changes in advanced stages of DDD are well-studied, very little data exists on acute vertebral bone remodeling at the onset and progression of DDD. Purpose To longitudinally characterize bony remodeling in a rodent model of disc injury-induced DDD. Study Design/Setting In vivo animal study involving a rat annulus fibrosus injury model of DDD. Methods: Eight female Lewis rats were assigned to IVD injury (Puncture) or sham surgery (Sham). All rats underwent anterior, transperitoneal approach to the lumbar spine, and Puncture rats underwent annulus fibrosus injury at the L3-L4 and L5-L6 IVDs (n=8 per group). Live μ CT imaging (10- μ m voxel size) was performed 1 week prior to surgery and postoperatively at 2-week intervals up to a 12-week endpoint. Bone morphology and densitometry of the cranial vertebral body and bony endplate were analyzed and reported with respect to the pre-operative baseline scan. Sagittal Safranin-O/Fast-Green and Toluidine Blue histology evaluated using the Rutges IVD score and a custom vertebral endplate score. Results: Vertebral trabecular tissue mineral density (TMD), vertebral trabecular spacing (Tb.Sp), endplate TMD and endplate apparent bone mineral density (BMD) were all significantly greater in Puncture compared to Sham at 4 weeks and each subsequent timepoint. Puncture rats exhibited marginally lower endplate total volume (TV). Anterior endplate osteophyte formation and central physeal ossification were observed in Puncture rats. Endpoint histological analysis demonstrated moderate evidence of IVD degeneration, indicating that vertebral bone adaptation occurs in the acute phases of DDD onset and progression. Conclusions: Annulus injury-induced DDD leads to acute and progressive changes to the morphology and densitometry of bone in the adjacent vertebral bodies and endplates.

Maisels MJ (2018). "Phototherapy in the neonatal intensive care unit - quantity and quality." [Acta Paediatrica](#) 107(4): 551-553.

[Full Text](#)

Department of Pediatrics

The authors talk about a study focusing on the use of phototherapy in the neonatal intensive care units. Topics discussed include the use of intravenous immunoglobulin (IVIG) in the study; the short term side

effects of phototherapy including DNA damage and oxidative stress; and the aim of phototherapy to avoid exchange transfusions.

Mando R, **Muallem E**, Meka SG and **Berghea R** (2018). "A blind spot in the diagnostic field: The challenging diagnosis of tumefactive multiple sclerosis." Case Reports in Neurological Medicine 2018: 6841291-6841291.

[Full Text](#)

Department of Internal Medicine

OUIB Medical Student Author

Tumefactive Multiple Sclerosis (TMS) is a rare variant with 1 per 1000 cases of MS and 3 per million cases per year. TMS can mimic clinical and radiological features of a neoplasm, infarction, or abscess and therefore can be diagnostically challenging for clinicians. We present a clinical scenario of a patient presenting with left homonymous hemianopia with atypical radiological features initially thought to be more consistent with neoplasm or infarction. Ultimately, biopsy was done which led to the diagnosis of tumefactive multiple sclerosis.

May T, Altman A, McGee J, Lu L, Xu W, Lane K, Ghatage P and **Rosen B** (2018). "Examining survival outcomes of 852 women with advanced ovarian cancer: A multi-institutional cohort study." International Journal of Gynecological Cancer 28(5): 925-931.

[Full Text](#)

Department of Obstetrics and Gynecology

This study examines patterns of clinical practice in the management of women with advanced high-grade serous ovarian carcinoma (HGSC). Methods A total of 852 patients with advanced HGSC were included in this retrospective cohort analysis. Patients underwent primary cytoreductive surgery (PCS) or neoadjuvant chemotherapy (NACT). Wilcoxon rank-sum test and χ^2 test were applied. Univariate- and multivariate-analyses were performed, and survival outcomes were measured using Kaplan–Meier curves. Results A total of 449 (53%) of 852 patients underwent PCS, and 403(47%) of 852 patients underwent NACT. The median 5-year overall survival (OS) was 3.89 in PCS and 2.48 in NACT. Patients with 0 mm residual had OS of 4.66, compared with 1- to 9-mm residual (OS = 2.80) and 10-mm residual or longer (OS = 2.50). The survival advantage harbored by the extent of surgical cytoreduction was more pronounced in PCS compared with NACT (P < 0.001). Patients who had PCS with 1- to 9-mm residual had similar OS to NACT patients with 0-mm residual (P = 0.17) and superior OS to NACT with 1- to 9-mm residual (P < 0.001). Conclusions In this multicenter study, 53% of women with advanced HGSC seen by a gynecologic oncologist were selected for PCS. Survival was longer in patients who underwent PCS than patients who underwent NACT. Within each group, survival was highest in those who had complete cytoreduction to 0-mm residual disease. We believe all patients with advanced HGSC should be assessed by a gynecologic oncologist for the feasibility of surgical resection. Primary cytoreductive surgery should be the favorable treatment modality with the goal of complete resection to 0 mm residual disease. Importantly, if 0 mm residual is not feasible, PCS to a residual of 1 to 9 mm should be attempted given the survival advantage in this group over patients who were treated with NACT.

McKee C, Beeravolu N, Bakshi S, Thibodeau B, **Wilson G**, **Perez-Cruet M** and Rasul Chaudhry G (2018). "Cytotoxicity of radiocontrast dyes in human umbilical cord mesenchymal stem cells." Toxicology and Applied Pharmacology 349: 72-82.

[Full Text](#)

Department of Radiation Oncology

Department of Neurosurgery

Radiocontrast dyes are used for a wide range of diagnostic procedures for enhancing the image of anatomical structures, pain targets, and vascular uptake. While some of these dyes show toxicity to primary cells, their effect on stem cells, particularly mesenchymal stem cells (MSCs), is unknown. This study investigates the cytotoxic effects of two clinically used radiocontrast dyes, iohexol and iopamidol, on bone marrow and human umbilical cord MSCs. Exposure to these dyes significantly affected morphology of MSCs from both sources, as treated cells appeared transparent and no longer fibroblastoid. Cell viability decreased as determined by trypan blue and Annexin-V/PI staining, in a dose dependent manner with simultaneous loss of CD90 and CD105 concurrent with spontaneous differentiation in MSCs treated with iohexol and

iopamidol. In addition, significantly higher cell death was observed in MSCs exposed to iopamidol than iohexol. At a concentration of 1:1, iohexol and iopamidol induced apoptosis in 19% and 92% (<.01) of MSCs, respectively. Global transcriptome analysis of treated MSCs revealed 139 and 384 differentially expressed genes in iohexol vs control and iopamidol vs control at $p \leq .01$ and 1.5-fold, respectively. This suggested that iopamidol had more significant effect on the transcription of MSCs. Based on these results a molecular mechanism of radiocontrast dye induced cell death via intrinsic apoptosis pathway mediated by p53 was proposed. Since iopamidol was significantly more toxic than iohexol in human MSCs, a more careful examination of safety of radiocontrast dyes for clinical use is warranted.

McKnight BN, Kuda-Wedagedara ANW, Sevak KK, Abdel-Atti D, **Wiesend WN**, Ku A, Selvakumar D, Carlin SD, Lewis JS and Viola-Villegas NT (2018). "Imaging EGFR and HER3 through (89)Zr-labeled MEHD7945A (Duligotuzumab)." *Scientific reports* 8(1): 9043-9043.

[Full Text](#)

Department of Pathology

Tumor resistance to treatment paved the way toward the development of single agent drugs that target multiple molecular signatures amplified within the malignancy. The discovered crosstalk between EGFR and HER3 as well as the role of HER3 in mediating EGFR resistance made these two receptor tyrosine kinases attractive targets. MEHD7945A or duligotuzumab is a single immunotherapy agent that dually targets both molecular signatures. In this study, a positron emission tomography (PET) companion diagnostic to MEHD7945A is reported and evaluated in pancreatic cancer. Tumor accretion and whole body pharmacokinetics of (89)Zr-MEHD7945A were established. Specificity of the probe for EGFR and/or HER3 was further examined.

Moore DD, Baker KC, Baker EA, Fleischer MM, Newton MD, Barreras N, **Vaupel ZM** and **Fortin PT** (2018). "Effect of bisphosphonate pretreatment on fresh osteochondral allografts: Analysis of in vitro graft structure and in vivo osseous incorporation." *Orthopedics* 41(3): e376-e382.

[Request Form](#)

Department of Orthopedic Surgery

Fresh allograft transplantation of osteochondral defects restores functional articular cartilage and subchondral bone; however, rapid loss of chondrocyte viability during storage and osteoclast-mediated bone resorption at the graft-host interface after transplantation negatively impact outcomes. The authors present a pilot study evaluating the in vitro and in vivo impact of augmenting storage media with bisphosphonates. Forty cylindrical osteochondral cores were harvested from femoral condyles of human cadaveric specimens and immersed in either standard storage media or storage media supplemented with nitrogenated or non-nitrogenated bisphosphonates. Maintenance of graft structure and chondrocyte viability were assessed at 3 time points. A miniature swine trochlear defect model was used to evaluate the influence of bisphosphonate-augmented storage media on in vivo incorporation of fresh osteochondral tissue, which was quantified via μ CT and decalcified histology. In the in vitro study, Safranin-O/Fast Green staining showed that both low- and high-dose nitrogenated-treated grafts retained chondrocyte viability and cartilage matrix for up to 43 days of storage. Allografts stored in nitrogenated-augmented storage media showed both μ CT and histologic evidence of enhanced in vivo bony and cartilaginous incorporation in the miniature swine trochlear defect model. Several preclinical studies have shown the potential for enhanced storage of fresh osteochondral allografts via additions of relatively common drugs and biomolecules. This study showed that supplementing standard storage media with nitrogenated bisphosphonates may improve maintenance of chondrocyte viability and graft structure during cold storage as well as enhance in vivo osseous and cartilaginous incorporation of the graft.

Moran J, Vicini F, Grubb M, Benedetti L, Bichay T, Boike T, Burmcistcr J, Domincllo M, Dryden D, Griffithh K, **Gustafson G**, Hayman J, Haywood J, Jagsi R, Lack D, Marsh R, Matuszak M, Mietzel M, Narayana V, Parker J, Radawski J, Wilson M, Pierce L, Speers C and Mroqc (2018). "The value of performance metrics in a large statewide consortium: Using planning target volumes towards improvements in breast planning." *Medical Physics* 45(6): E201-E202.

Department of Radiation Oncology

Moses RA, Selph JP, Voelzke BB, Piotrowski J, Eswara JR, Erickson BA, Gupta S, Dmochowski RR, Johnsen NV,

Shridharani A, Blaschko SD, Elliott SP, Schwartz I, Harris CR, Borawski K, Figler BD, Osterberg ECO, III, **Burks FN**, Bihle W, III, Miller B, Santucci RA, Breyer BN, Flynn B, Higuchi T, Kim FJ, Broghammer JA, Presson AP and Myers JB (2018). "An American Association for the Surgery of Trauma (AAST) prospective multi-center research protocol: Outcomes of urethral realignment versus suprapubic cystostomy after pelvic fracture urethral injury." Translational Andrology and Urology 7(4): 512-520.

[Full Text](#)

Department of Urology

Background: Pelvic fracture urethral injuries (PFUI) occur in up to 10% of pelvic fractures. It remains controversial whether initial primary urethral realignment (PR) after PFUI decreases the incidence of urethral obstruction and the need for subsequent urethral procedures. We present methodology for a prospective cohort study analyzing the outcomes of PR versus suprapubic cystostomy tube (SPT) after PFUI. Methods: A prospective cohort trial was designed to compare outcomes between PR (group 1) and SPT placement (group 2). Centers are assigned to a group upon entry into the study. All patients will undergo retrograde attempted catheter placement; if this fails a cystoscopy exam is done to confirm a complete urethral disruption and attempt at gentle retrograde catheter placement. If catheter placement fails, group 1 will undergo urethral realignment and group 2 will undergo SPT. The primary outcome measure will be the rate of urethral obstruction preventing atraumatic passage of a flexible cystoscope. Secondary outcome measures include: subsequent urethral interventions, post-injury complications, urethroplasty complexity, erectile dysfunction (ED) and urinary incontinence rates. Results: Prior studies demonstrate PR is associated with a 15% to 50% reduction in urethral obstruction. Ninety-six men (48 per treatment group) are required to detect a 15% treatment effect (80% power, 0.05 significance level, 20% loss to follow up/death rate). Busy trauma centers treat complete PFUI approximately 1-6 times per year, thus our goal is to recruit 25 trauma centers and enroll patients for 3 years with a goal of 100 or more total patients with complete urethral disruption. Conclusions: The proposed prospective multi-institutional cohort study should determine the utility of acute urethral realignment after PFUI. ©Translational Andrology and Urology.

Mukherjee D, Sopczynski B, **Espinosa M** and **Brahmamdam P** (2018). "Gastric diverticulum causing gastric outlet obstruction in the setting of duodenal atresia." Journal of Pediatric Surgery Case Reports 31: 84-87.

[Full Text](#)

Department of Surgery

Department of Pediatrics

Duodenal obstruction due to duodenal atresia occurs in 1 in 10,000 live births and is the most common type of intestinal obstruction in neonates [1–3]. Gastric outlet obstruction in the newborn period from causes other than hypertrophic pyloric stenosis is very uncommon [3]. Potential etiologies include gastric volvulus, antral web, and duplication cysts. Gastric diverticula in the infant is even more rare, with only a few case reports published, and only one describes a gastric diverticulum in the presence of a duodenal atresia [4–8]. In this report, we describe the first case of a gastric outlet obstruction due to a gastric diverticulum in the presence of duodenal atresia.

Mulpuri K, Schaeffer EK, Graham HK, Kocher MS, Sanders J and **Zaltz I** (2018). "Evidence-based recommendations for pediatric orthopaedic practice." Journal of Pediatric Orthopaedics 38(4): e225-e229.

[Full Text](#)

Department of Orthopedic Surgery

Background: Evidence-based medicine has become the cornerstone to guide clinical practice decision-making. Evidence-based medicine integrates the strongest available evidence with clinical expertise to make decisions about clinical care. The quality of the evidence depends upon the soundness of the study methodology to allow for meaningful interpretation of the clinical results. The purpose of this review is to analyze the methodological design and clinical findings of published pediatric orthopaedic studies to determine their ability to change or influence clinical practice. Methods: This is the first in a series of evidence-based reviews in pediatric orthopaedics. The pediatric orthopaedic literature was reviewed for randomized controlled trials (RCTs) published in 2013 to 2014. Two RCTs were selected from the Journal of Bone and Joint Surgery for in depth methodological review and analysis. Methodological reviews were performed by 2 orthopaedic surgeons with advanced research degrees. Following this, 2 clinical experts reviewed the articles to rate the clinical impact or value of each study. Methodological and clinical reviews

were compiled, and a final recommendation on impact to change clinical practice was made based on both review components at the consensus of the panel. Results: The first study reviewed investigated the impact of physical therapy on function following supracondylar humeral fractures in children. The reviewers deemed the superiority study to of sound design, and conclusions appropriate for the methodology used and clinical findings. The results do not compel a recommendation to change clinical practice. The second study investigated the impact of Botulinum Toxin A with casting for the treatment of idiopathic toe-walking in children. Although of relatively sound design, the sample size was too small to appropriately perform some statistical comparisons. No recommendation to change clinical practice could be made. Conclusion: Both RCTs reviewed were superiority studies with a negative result. No recommendation to change clinical practice could be made. Significance: Interpretation of superiority studies with nonsignificant findings must be done with caution. The findings of both of these RCTs highlight the need for more noninferiority trials in the pediatric orthopaedic literature in order to appropriately demonstrate no difference between 2 treatment options.

Nasr JA, Falatko J and **Halalau A** (2018). "The impact of critical appraisal workshops on residents' evidence based medicine skills and knowledge." Advances in Medical Education and Practice 9: 267-272.

[Full Text](#)

Department of Internal Medicine

Objective: To assess the impact of four evidence based medicine (EBM) critical appraisal education workshops in improving residents' EBM knowledge and skills. Methods: The eligible participants in the workshops were 88 residents-in-training, postgraduate years one through four, rotating through the outpatient internal medicine clinic. Four EBM workshops, consisting of 3 days each (30 minutes daily), were taught by our faculty. Topics covered included critical appraisal of randomized controlled trials, case-control and cohort studies, diagnosis studies, and systematic reviews. Results: As a program evaluation, anonymous pre-workshop and post-workshop tests were administered. Each of the four sets of tests showed improvement in scores: therapy from 58% to 77% (42% response rate), harm from 65% to 73% (38% response rate), diagnosis from 49% to 68% (49% response rate), and systematic review from 57% to 72% (30% response rate). Conclusion: We found that teaching EBM in four short workshops improved EBM knowledge and critical appraisal skills related to the four topics.

Nguyen LN, **Bartley J**, Killinger KA, Gupta P, Lavin J, Khourdaji A, **Gilleran J**, Gaines N, Boura JA and **Peters KM** (2018). "Does sex matter? A matched pairs analysis of neuromodulation outcomes in women and men." International Urology and Nephrology 50(5): 825-832.

[Full Text](#)

Department of Urology

To evaluate whether baseline symptoms and outcomes are influenced by gender in a matched cohort undergoing neuromodulation.

Nguyen LN, **Gruner M**, Killinger KA, **Peters KM**, Boura JA, Jankowski M and **Sirls LT** (2018). "Additional treatments, satisfaction, symptoms and quality of life in women 1 year after vaginal and abdominal pelvic organ prolapse repair." International Urology and Nephrology 50(6): 1031-1037.

[Full Text](#)

OUWB Medical Student Author

Department of Urology

To evaluate additional treatments, symptoms, satisfaction and quality of life 1 year after vaginal and abdominal pelvic organ prolapse (POP) repair.

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 (2018). "ECG predictors of cardiac arrhythmias in older adults with syncope." Annals of Emergency Medicine 71(4): 452-461. e3.

[Full Text](#)

Department of Emergency Medicine

Department of Anesthesiology

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, Muftuoglu IK, Gaber R, Robinson J, **Drenser K**, Capone A and Trese MT (2018). "Glaucoma after lens-sparing vitrectomy for advanced retinopathy of prematurity." *Ophthalmology* 125(5): 671-675.

[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.

Ogawa T, Ishizuka O, Ueda T, Tyagi P, **Chancellor MB** and Yoshimura N (2018). "Pharmacological management of interstitial cystitis/bladder pain syndrome and the role cyclosporine and other immunomodulating drugs play." *Expert Review of Clinical Pharmacology* 11(5): 495-505.

[Request Form](#)

Department of Urology

Introduction: Interstitial cystitis/bladder pain syndrome (IC/BPS) is a symptomatic disorder characterized by

pelvic pain and urinary frequency. Immunological responses are considered as one of the possible etiologies of IC/BPS. In this review, we focused on emerging targets, especially on those modulating immunological mechanisms for the treatments of IC/BPS. Area covered: This review was based on the literature search of PubMed/MEDLINE, for which key words following bladder pain syndrome, interstitial cystitis, and/or cyclosporine A (CyA) were used. We discussed current treatments and the drugs targeting the immune responses including CyA and other drugs with different mechanisms including NGF antibodies and P2X3 antagonists. Expert commentary: IC/BPS is often difficult to treat by current treatments. Immunosuppression agents, especially CyA are considered as effective treatments for IC/BPS with Hunner's lesion because these drugs suppress the inflammatory responses in the bladder underlying urinary symptoms of the disease. Based on the previous literatures, we should use CyA for the refractory IC/BPS, especially that with Hunner's lesion due to its side effects. New drugs targeting other mechanisms such as urothelial or afferent nerve dysfunction or new delivery systems such as sustained drug releasing devices or gene therapy techniques may be promising for the future treatments of IC/BPS.

Ogunyemi D, Jovanovski A, Friedman P, **Sweatman B** and **Madan I** (2018). "Temporal and quantitative associations of electronic fetal heart rate monitoring patterns and neonatal outcomes." [The Journal of Maternal-Fetal & Neonatal Medicine](#): 1-10.

[Request Form](#)

Department of Obstetrics and Gynecology

OUIWB Medical Student Author

Objective: The objective of this study is to evaluate the associations of electronic fetal heart rate monitoring (EFM) patterns and adverse neonatal outcomes. **Study design:** From 2013 to 2016; 12,067 term, singleton deliveries in labor ≥ 2 h with abnormal EFM defined as absent accelerations, variable, late or prolonged decelerations, tachycardia, bradycardia, or minimal variability were analyzed as any documentation during labor, in first hour and last hour of labor. Outcomes were composite neonatal adverse outcomes, neonatal intensive care unit (NICU) admission, neonatal hypoxia, neonatal hypoglycemia, umbilical artery pH, and base excess. Independent associations were ascertained using regression analysis. **Results:** Significant independent associations occurred between any abnormal EFM during the last hour and five adverse neonatal outcomes; between abnormal EFM at any time and one adverse neonatal outcome while there was none with the first hour of labor. In the last hour, accelerations had significant negative associations with three adverse neonatal outcomes, while prolonged decelerations, late decelerations, tachycardia, and bradycardia had significant positive associations with three adverse neonatal outcomes. Throughout labor, increasing accelerations events were significantly negatively correlated with all adverse neonatal outcomes, while increasing frequency of late, variable, and prolonged decelerations were positively associated with five adverse neonatal outcomes. Hierarchical analysis showed that bradycardia/tachycardia contributed only 0.8%, while all EFM periodic changes contributed 1%; the addition of the frequencies of abnormal EFM events contributed 0.6% to the variance in umbilical artery pH and base excess. **Conclusions:** Terminal EFM patterns are independently associated with neonatal outcomes. Accelerations are protective of adverse neonatal outcomes. Increasing frequency of EFM patterns overtime contributes to neonatal outcome.

Otoupalova E, **Dalal B** and **Patel V** (2018). "A new tool for an old disease: Endotracheal cyst diagnosed by EBUS." [Journal of Bronchology & Interventional Pulmonology](#) 25(2): e16-e17.

[Full Text](#)

Department of Internal Medicine

Pang Y and **Keena DT** (2018). "Phantoms of the past: Multiple organ dysfunction in a patient with tetralogy of Fallot and relapse of Diamond-Blackfan Anemia." [American Journal of Respiratory and Critical Care Medicine](#) 197: A3462-A3462.

[Full Text](#)

Department of Internal Medicine

Pang YF and **Zarouk S** (2018). "Spontaneous iliopsoas tendon rupture in an elderly woman with end-stage kidney disease." [American Journal of Kidney Diseases](#) 71(4): 572-573.

Department of Internal Medicine

Parma C, **Dilworth J**, Pople B, Boura J and **Dekhne N** (2018). "Investigation into the utilization of accelerated partial breast irradiation in early-stage breast cancer patients." *Annals of Surgical Oncology* 25: 592-593.

Department of Surgery

Department of Radiation Oncology

Parma C, **Dilworth J**, Pople B and **Dekhne N** (2018). "Local control practices in early-stage breast cancer after publication of the 2014 SSO Invasive Breast Disease Guidelines." *Annals of Surgical Oncology* 25: 554-555.

Department of Radiation Oncology

Department of Surgery

Paximadis P, Schipper M, Matuszak M, Feng M, Jolly S, Boike T, **Grills I**, Kestin L, Movsas B, Griffith K, **Gustafson G**, Moran J, Nurushev T, Radawski J, Pierce L and Hayman J (2018). "Dosimetric predictors for acute esophagitis during radiation therapy for lung cancer: Results of a large statewide observational study." *Practical Radiation Oncology* 8(3): 167-173.

[Request Form](#)

Department of Radiation Oncology

Purpose: The purpose of this study is to identify dosimetric variables that best predict for acute esophagitis in patients treated for locally advanced non-small cell lung cancer in a prospectively accrued statewide consortium. Methods and Materials: Patients receiving definitive radiation therapy for stage II-III non-small cell lung cancer within the Michigan Radiation Oncology Quality Consortium were included in the analysis. Dose-volume histogram data were analyzed to determine absolute volumes (cc) receiving doses from 10 to 60 Gy (V10, V20, V30, V40, V50, and V60), as well as maximum dose to 2 cc (D2cc), mean dose (MD), and generalized equivalent uniform dose (gEUD). Logistic regression models were used to characterize the risk of toxicity as a function of dose and other covariates. The ability of each variable to predict esophagitis, individually or in a multivariate model, was quantified by receiver operating characteristic analysis. Results: There were 533 patients who met study criteria and were included; 437 (81.9%) developed any grade of esophagitis. Significant variables on univariate analysis for grade ≥ 2 esophagitis were concurrent chemotherapy, V20, V30, V40, V50, V60, MD, D2cc, and gEUD. For grade ≥ 3 esophagitis, the predictive variables were: V30, V40, V50, V60, MD, D2cc, and gEUD. In multivariable modeling, gEUD was the most significant predictor of both grade ≥ 2 and grade ≥ 3 esophagitis. When gEUD was excluded from the model, D2cc was selected as the most predictive variable for grade ≥ 3 esophagitis. For an estimated risk of grade ≥ 3 esophagitis of 5%, the threshold values for gEUD and D2cc were 59.3 Gy and 68 Gy, respectively. Conclusions: In this study, we report the novel finding that gEUD and D2cc, rather than MD, were the most predictive dose metrics for severe esophagitis. To limit the estimated risk of grade ≥ 3 esophagitis to $< 5\%$, thresholds of 59.3 Gy and 68 Gy were identified for gEUD and D2cc, respectively.

Perlin L and **Fisher J** (2018). "Patient satisfaction with single-port vs multi-port minimally invasive hysterectomies." *Obstetrics and Gynecology* 131: 188S-189S.

Department of Obstetrics and Gynecology

Perry CR, Fahs AM, Kurdziel MD, Koueiter DM, **Fayne RJ** and **Verner JJ** (2018). "Intraoperative psoas compartment block vs preoperative fascia iliaca block for pain control after direct anterior total hip arthroplasty: A randomized controlled trial." *The Journal of Arthroplasty* 33(6): 1770-1774.

[Full Text](#)

Department of Orthopedic Surgery

Department of Anesthesiology

Background: Modern joint arthroplasty protocols place an emphasis on minimizing patient-reported postoperative pain while minimizing opioid consumption. The use of multimodal pain management protocols has been reported to improve patient outcomes and satisfaction after total hip arthroplasty. Methods: In a prospective, single-surgeon trial, 50 patients undergoing primary direct anterior approach total hip arthroplasty were randomized to receive a preoperative fascia iliaca compartment block (FICB) or an intraoperative surgeon-delivered psoas compartment block (PCB). Patient-reported pain was recorded in the

postanesthesia care unit, recovery floor and 3 weeks postoperatively. Opioid use was recorded during the hospital stay. Results Average visual analog scale pain scores in the postanesthesia care unit were 38.7 ± 8.7 vs 35.6 ± 8.3 ($P = .502$) for the preoperative FICB and intraoperative PCB groups, respectively. No significant difference was found between groups at the 3-week visit for postoperative pain (FICB: 2.9 ± 1.4 ; PCB: 3.2 ± 2.0 ; $P = .970$) and patient-reported pain satisfaction (FICB: 8.8 ± 2.2 ; PCB: 9.7 ± 0.6 ; $P = .110$). Conclusion: During the direct anterior approach for total hip arthroplasty, PCB is an effective and efficient regional anesthesia technique. It may be used to obtain satisfactory postoperative pain control and patient satisfaction while decreasing hospital resources.

Pinder-Arabbpour A, Jones B, Castillo R, Castillo E, **Guerrero T**, Goodman K, Schefter T, Kwak I, Miften M and Vinogradskiy Y (2018). "Characterizing spatial lung function for esophageal cancer patients." *Medical Physics* 45(6): E581-E581.

Department of Radiation Oncology

Poulose BK, Harris DA, Phillips S, **Janczyk RJ**, Yunis J, Voeller GR, Carbonell A, Warren J, Stoikes N, Webb D, Hope WW, Rosen MJ and Americas Hernia Society Quality C (2018). "Reducing early readmissions after ventral hernia repair with the Americas Hernia Society Quality Collaborative." *Journal of the American College of Surgeons* 226(5): 814-824.

[Full Text](#)

Department of Surgery

Background: Early readmission after ventral hernia repair (VHR) can hinder patient recovery and increase resource use. The objective of this study was to evaluate the effectiveness of the Americas Hernia Society Quality Collaborative Early Readmission Reduction Initiative in reducing early readmissions after VHR. Study Design: Risk factors for early readmission and best practices of surgeons with the lowest readmission rates after VHR were determined through collaborative learning. Two interventions for reducing early readmissions were developed: a structured questionnaire administered to patients within 1 week after discharge from the hospital or an early clinic visit after discharge and before a regularly scheduled postoperative visit. Multivariable logistic regression was used to evaluate the impact of these interventions on early readmission. Results: Use of the questionnaire and early clinic visit was tracked in 3,007 patients. Of these, 343 received the questionnaire (2.6% readmission rate), 761 had an early clinic visit after discharge (3.0% readmission rate), 138 had both (4.3% readmission rate), and 1,765 patients received neither (5.9% readmission rate). After controlling for factors associated with early readmissions, administration of the questionnaire (odds ratio 0.42; 95% CI 0.21 to 0.84; $p < 0.05$) or having an early clinic visit (odds ratio 0.48; 95% CI 0.30 to 0.76; $p < 0.05$) were both associated with reduced odds for readmission. Conclusions: The Americas Hernia Society Quality Collaborative Early Readmission Reduction Initiative successfully reduced readmissions after VHR using a structured questionnaire or early clinic visit implemented after discharge and before routine 30-day postoperative follow-up.

Pressman A, Sawyer KN, Devlin W and Swor R (2018). "Association between percutaneous hemodynamic support device and survival from cardiac arrest in the state of Michigan." *The American Journal of Emergency Medicine* 36(5): 834-837.

[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 $p < 0.001$). 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.

Qafiti F, Kaur S and Bahado-Singh R (2018). "Development of a clinical risk assessment tool for 6-week postpartum visit nonadherence." *American Journal of Perinatology* 36(7): 688-694.

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OUWB 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.

Qin A, Liang J, Zhou J, Lachaine M and Yan D (2018). "Robustness evaluation of KV-streaming based real-time vertebrae tracking during spine SBRT." *Medical Physics* 45(6): E383-E384.

Department of Radiation Oncology

Ramírez DAM, Jiménez VMV, López XH and **Ysunza PA** (2018). "Acoustic analysis of voice and electroglottography in patients with laryngopharyngeal reflux." *Journal of Voice* 32(3): 281-284.

[Full Text](#)

Department of Physical Medicine & Rehabilitation

Background: Laryngopharyngeal reflux (LPR) refers to the flow of gastric acid content into the laryngopharynx. It has been reported that 10% of the patients consulting an otolaryngologist present with this condition. Signs of LPR can be identified during flexible or rigid laryngoscopy. The Voice Handicap Index (VHI) is a reliable tool for detecting the impact of voice disorders, and acoustic assessment of voice including acoustic analysis of voice (AAV) and electroglottography (EGG) provide objective data of voice production and voice disorders. **Objective:** This study aimed to describe changes in AAV, EGG, and VHI in patients who present with LPR compared with a matched control group of healthy subjects. **Materials and Methods:** Seventeen patients with LPR were studied. A group of healthy subjects matched by age and gender without any history of voice disorder, LPR, or gastroesophageal reflux disease was assembled. Both groups of patients were studied by VHI, flexible laryngoscopy, AAV, and EGG. **Results:** All patients with LPR demonstrated abnormal VHI values. Shimmer, jitter, open quotient, and irregularity were significantly increased in the patients with LPR. Nonsignificant correlations were found between VHI scores and abnormal acoustic parameters in patients with LPR. **Conclusions:** Although abnormal acoustic parameters of patients with LPR were not predictive of the overall VHI score, the abnormal acoustic parameters of patients with LPR suggest a decrease in adequate laryngeal control during phonation. © 2018 The Voice Foundation

Rao P, Dedania VS and **Drenser KA** (2018). "Congenital x-linked retinoschisis: An updated clinical review." *Asia-Pacific Journal of Ophthalmology* 7(3): 169-175.

[Full Text](#)

Department of Ophthalmology

We present an updated clinical review of the pathophysiology, progression, and current treatments in pediatric patients with congenital X-linked retinoschisis (CXLRS). CXLRS is an X-linked inherited retinal degeneration characterized by splitting of the superficial layers of the retina. Most recent classification divides CXLRS into 4 distinct clinical phenotypes: type 1, foveal; type 2, foveolamellar; type 3, complex; and type 4, foveoperipheral. The majority of retinoschisis cavities remain stable throughout life and may spontaneously collapse. However, a select number of patients progress to macula-involving peripheral retinoschisis, rhegmatogenous, and combined tractional-rhegmatogenous detachments that require further intervention. Although several advances have been made over the past several decades, medical therapy remains limited to case series-based carbonic anhydrase therapy and prophylactic laser retinopexy. Recent advances in genetic-based clinical trials with the retinoschisis gene are promising. Vitreoretinal surgical approaches remain complex, case-based, and require careful planning depending on the configuration and location of the retinoschisis cavity. Copyright © 2018 by Asia Pacific Academy of Ophthalmology.

Reygaert WC (2018). "An overview of the antimicrobial resistance mechanisms of bacteria." [Aims Microbiology](#) 4(3): 482-501.

[Full Text](#)

Department of Foundational Medical Studies

Resistance to antimicrobial agents has become a major source of morbidity and mortality worldwide. When antibiotics were first introduced in the 1900's, it was thought that we had won the war against microorganisms. It was soon discovered however, that the microorganisms were capable of developing resistance to any of the drugs that were used. Apparently most pathogenic microorganisms have the capability of developing resistance to at least some antimicrobial agents. The main mechanisms of resistance are: limiting uptake of a drug, modification of a drug target, inactivation of a drug, and active efflux of a drug. These mechanisms may be native to the microorganisms, or acquired from other microorganisms. Understanding more about these mechanisms should hopefully lead to better treatment options for infective diseases, and development of antimicrobial drugs that can withstand the microorganisms attempts to become resistant.

Richmond NL, Meyer ML, Hollowell AG, Isenberg EE, Domeier RM, **Swor RA**, Hendry PL, Peak DA, Rathlev NK, Jones JS, Lee DC, Jones CW and Platts-Mills TF (2018). "Social support and pain outcomes after trauma exposure among older adults: A multicenter longitudinal study." [The Clinical Journal of Pain](#) 34(4): 366-374.

[Full Text](#)

Department of Emergency Medicine

Objectives: Certain forms of social support have been shown to improve pain-coping behaviors and pain outcomes in older adults with chronic pain, but little is known about the effect of social support on pain outcomes in older adults following trauma exposure. Methods: We analyzed data from a prospective longitudinal study of adults aged 65 years and older presenting to an emergency department after a motor vehicle collision (MVC) to characterize the relationship between perceived social support and MVC-related pain after trauma overall and by subgroups based on sex, depressive symptoms, and marital status. Results: In our sample (N=176), patients with low perceived social support had higher pain severity 6 weeks after MVC than patients with high perceived social support after adjustment for age, sex, race, and education (4.2 vs. 3.2, P=0.04). The protective effect of social support on pain severity at 6 weeks was more pronounced in men and in married individuals. Patients with low social support were less likely to receive an opioid prescription in the emergency department (15% vs. 32%, P=0.03), but there was no difference in opioid use at 6 weeks (22% vs. 20%, P=0.75). Discussion: Among older adults experiencing trauma, low perceived social support was associated with higher levels of pain at 6 weeks.

Robadi IA, Pharaon M and **Ducatman BS** (2018). "The importance of high-risk human papillomavirus types other than 16 and 18 in cervical neoplasia." [Archives of Pathology and Laboratory Medicine](#) 142(6): 693-695.

[Full Text](#)

Department of Pathology

Context: Types 16 and 18 are the most widely studied high-risk types of human papillomavirus (HPV).

However, other high-risk HPV types (HPV non-16/18) also play a significant role in cervical neoplasia. Currently, screening and management algorithms separate out HPV 16/18 from all other HPV non-16/18 types. In addition, most of the previously vaccinated population has only been vaccinated for these high-risk types, so many women are still vulnerable to HPV non-16/18 infections. Objective.-To review the prevalence and role of HPV non-16/18 neoplasia and to review current surveillance, management, and vaccination strategies in view of these findings. Data Sources: The study comprised a review of the literature. Conclusions: Although HPV non-16/18 types are less frequently associated with cervical intraepithelial neoplasia and cancer, they are nonetheless a significant cause of disease. Further stratification of higher-risk HPV non-16/18 may be necessary to improve prevention and management, however, regional prevalence differences may make a unified approach difficult. As HPV 16/18 infections decrease owing to vaccination of at-risk women, the relative frequency of HPV non-16/18 will increase, although the latest vaccine covers several more high-risk types.

Rodriguez FF and **Liroff KG** (2018). "Cesium chloride: Prolonging QTC internals, not life expectancy." Journal of General Internal Medicine 33: S485-S485.

[Full Text](#)

OUIWB Medical Student Author

Rodriguez FF, Silverman JV, **Dogra S** and **Nair G** (2018). "An unusual case of mycobacterium porcinum related septic shock in a peritoneal dialysis patient." American Journal of Respiratory and Critical Care Medicine 197: 2.

[Full Text](#)

Department of Internal Medicine

Sanfilippo F, Powell D, **Folberg R** and Tykocinski M (2018). "Dealing with deans and academic medical center leadership: Advice from leaders." Academic Pathology 5: 2374289518765462-2374289518765462.

[Full Text](#)

Department of Foundational Medical Studies

The 2017 Association of Pathology Chairs Annual Meeting included a session for department chairs and other department leaders on "how to deal with deans and academic medical center leadership." The session was focused on discussing ways to foster positive relationships with university, medical school, and health system leaders, and productively address issues and opportunities with them. Presentations and a panel discussion were provided by 4 former pathology chairs who subsequently have served as medical deans and in other leadership positions including university provost, medical center CEO, and health system board chair. There was a strong consensus among the participants on how best to deal with superiors about problems, conflicts, and requests for additional resources and authority. The importance of teamwork and accountability in developing a constructive and collaborative relationship with leaders and peers was discussed in detail. Effectiveness in communication, negotiation, and departmental advocacy were highlighted as important skills. As limited resources and increased regulations have become growing problems for universities and health systems, internal stress and competition have increased. In this rapidly changing environment, advice on how chairs can interact most productively with institutional leaders is becoming increasingly important.

Sangal RB (2018). "Baseline sleep efficiency and arousal index do not predict who will benefit from sedatives in improving positive airway pressure adherence in sleep Apnea to 90%." Clinical EEG and Neuroscience 49(4): 285-289.

[Full Text](#)

Department of Family Medicine

Positive airway pressure (PAP) is the preferred treatment for obstructive sleep apnea (OSA), but adherence is low. Educational or ongoing supportive intervention improves the number of PAP adherent patients from the 50% to the 70% range. A common side effect of PAP is increased awakenings. This prospective trial examined baseline polysomnographically derived sleep efficiency and arousal index in PAP adherent and nonadherent patients, and in patients needing sedating medicines to attain PAP adherence versus those who did not need such medicines. Patients with OSA were titrated on PAP during a polysomnography or treated with autotitrating PAP, followed by educational and supportive interventions. Patients with PAP related awakenings (patients describing waking up and taking PAP off in the middle of the night) or difficulty

tolerating PAP were additionally treated with medicines that suppress arousals/awakenings (trazodone, mirtazapine, doxepin). A total of 120 of 151 (79%) new patients were $\geq 70\%$ PAP adherent over a continuous 30-day period, typically within the first 90 days of starting PAP, without sedating medicines. Nineteen of the remaining patients were treated with medicines that suppress arousals and awakenings, and 16 became adherent, resulting in 136 (90%) of 151 new patients achieving adherence. There were no differences in baseline sleep efficiency or arousal index, between adherent and nonadherent patients, as well as between patients who needed sedating medicines for PAP adherence and those who did not. Adding medicines that suppress arousals and awakenings for patients having trouble tolerating PAP, increases the number of patients who are PAP adherent. The need for such medicines seems to be related to the PAP side effect of increased awakenings rather than baseline impaired sleep. © EEG and Clinical Neuroscience Society (ECNS) 2017.

Sarode D, **Corral S, Albear S**, Christensen PJ and **Nair G** (2018). "In 'cysting' on a diagnosis of Sjogren's Syndrome." American Journal of Respiratory and Critical Care Medicine 197: 2.

[Full Text](#)

*Department of Internal Medicine
OUWB Medical Student Author*

Savasan ZA and Zeb A (2018). "Maternal and neonatal outcomes in pregnancies with invasive cancer." Obstetrics and Gynecology 131: 139S-139S.

Department of Obstetrics and Gynecology

Schweitzer PK, Strohl KP, Malhotra A, Rosenberg R, **Sangal R**, Pc Z, Thomas R, Chen D, Li J, Carter LP, Lee L, Black J and Thorpy MJ (2018). "Solriamfetol (JZP-110) in the treatment of excessive sleepiness in narcolepsy and obstructive sleep apnea: Maintenance of wakefulness test results across the day." Sleep 41: A231-A231.

Department of Family Medicine and Community Health

Sczepanski M and **Bozyk PD** (2018). "Institutional incidence of tPA-induced angioedema in ischemic cerebral vascular accidents." American Journal of Respiratory and Critical Care Medicine 197: 1.

[Full Text](#)

Department of Internal Medicine

Sczepanski M and **Dalal BD** (2018). "A common disease presenting uncommonly as stroke." American Journal of Respiratory and Critical Care Medicine 197: 1.

[Full Text](#)

Department of Internal Medicine

Seder CW, Raymond D, Wright CD, Gaissert HA, Chang AC, Becker S, Puri V, **Welsh R**, Burfeind W, Fernandez FG, Brown LM and Kozower BD (2018). "The Society of Thoracic Surgeons General Thoracic Surgery Database 2018 update on outcomes and quality." Annals of Thoracic Surgery 105(5): 1304-1307.

[Full Text](#)

Department of Surgery

For nearly 15 years The Society of Thoracic Surgeons General Thoracic Surgery Database (STS GTSD) has provided participating institutions with risk-adjusted feedback reports that allow outcome comparisons relative to national benchmarks. With more than 300 contributing centers across North America, the STS GTSD now includes more than 530,000 cases. In 2017 the STS GTSD Task Force revised the data collection form with the goal of collecting more detailed and accurate information for the most important thoracic surgical cases without increasing the workload of registrars. In addition, the learning curve for thoracoscopic lobectomy was examined, online public reporting was initiated, institutional feedback reports were made more user-friendly, and collaboration with the European Society of Thoracic Surgery continued. The STS GTSD Task Force continues to work to improve the quality of care and support research initiatives in general thoracic surgery. This report summarizes current aggregate national outcomes in general thoracic surgery and reviews related activities in the areas of quality measurement, performance improvement, and transparency from the STS GTSD during the past 12 months. (C) 2018 by The Society of Thoracic Surgeons

Shah I, Ogunyemi D and Ronk A (2018). "Attitudes and perceptions of healthcare providers regarding the safe reduction of the cesarean section." *Obstetrics and Gynecology* 131: 31S-32S.

[Full Text](#)

Department of Obstetrics and Gynecology
OUIB Medical Student Author

Shams C, Hakim S, Amin M and Cappell MS (2018). "Case report and literature review illustrating the clinical, endoscopic, radiologic, and histopathologic findings with prepouch ileitis after IPAA and restorative proctocolectomy for refractory ulcerative colitis." *Case Reports in Gastrointestinal Medicine*: 5.

[Full Text](#)

Department of Internal Medicine
Department of Pathology
OUIB Medical Student Author

Prepouch ileitis (PI) is an uncommon complication of ileal pouch anal anastomosis (IPAA) and restorative proctocolectomy (RPC) for treatment of refractory ulcerative colitis (UC). A case is reported of PI in a 16-year-old girl who presented with severe UC that was initially stabilized with infliximab therapy but re-presented 1 year later with severe UC, refractory to infliximab and corticosteroid therapy, which required IPAA and RPC. Her symptoms resolved postoperatively, but she re-presented 1 year later with 10 loose, bloody, bowel movements/day and involuntary 6-Kg weight-loss. Computerized tomographic enterography showed focal narrowing and mucosal enhancement of the pouch and focal narrowing, abnormal mucosal enhancement, and mural thickening of the prepouch ileum. Pouchoscopy revealed exudates and ulcerations in both the pouch and prepouch ileum up to 50 cm proximal to pouch, as confirmed by histopathology of pouch and ileal biopsies. Capsule endoscopy revealed no small intestinal lesions beyond 50 cm from the pouch. She required antibiotics, hydrocortisone enemas, and eventually azathioprine to control her symptoms. She remains asymptomatic 4 years later while chronically administered azathioprine therapy. Comprehensive literature review demonstrates that this case illustrates the classical clinical, radiologic, endoscopic, and histopathologic findings in PI, a relatively rare syndrome.

Siddiqui ZA and **Krauss DJ** (2018). "Adjuvant androgen deprivation therapy for prostate cancer treated with radiation therapy." *Translational Andrology and Urology* 7(3): 378-389.

[Full Text](#)

Department of Radiation Oncology

Radiation therapy is a commonly used curative modality for prostate cancer. The addition of androgen deprivation therapy (ADT) increases the curative potential of prostate radiotherapy (RT) in multiple subsets of patients. In addition to having an independent cytotoxic effect, current evidence suggests that androgen deprivation synergistically works with radiation therapy by preventing DNA repair. Given the wide-ranging toxicities of this therapy, clinicians must judiciously choose which patients may benefit from ADT and also consider the appropriate length of treatment. With recent advances in RT delivery, higher doses of radiation are currently used when compared with the dose used in historic trials, leading to the unanswered question of how RT dose interacts with ADT. Current and future clinical studies are attempting to further define the appropriate indications and patient populations for which ADT represents a clinically appropriate addition to prostate RT. © Translational Andrology and Urology.

Sobh AH, Koueiter DM, **Mells A**, Siljander MP and **Karadsheh MS** (2018). "The role of aspirin and unfractionated heparin combination therapy immediately after total hip and knee arthroplasty." *Orthopedics* 41(3): 171-176.

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OUIB Medical Student Author

Department of Orthopedic Surgery

Aspirin and unfractionated heparin (UH) are accepted options for venous thromboembolism (VTE) prophylaxis after total joint arthroplasty (TJA). The use of aspirin in addition to UH in preventing VTE after TJA has yet to be studied. The primary objective of this study was to determine VTE rates in patients receiving aspirin monotherapy and those receiving aspirin and UH combination therapy immediately following TJA. A TJA database from a single hospital system was retrospectively reviewed to identify all

patients who underwent primary hip or knee arthroplasty from 2013 to 2016. Patients were divided into 3 groups based on postoperative VTE chemoprophylaxis: aspirin only, aspirin with 1 dose of UH, and aspirin with multiple doses of UH. There were 5350 patients included: 1024 aspirin only, 1695 aspirin plus 1 dose of UH, and 2631 aspirin plus multiple doses of UH. Deep venous thrombosis and pulmonary embolus rates did not vary significantly between groups (deep venous thrombosis: 1.1%, 0.9%, and 1.2%, respectively, $P=.701$; pulmonary embolus: 0.3%, 0.3%, and 0.2%, respectively, $P=.894$). Transfusion rates were significantly greater with 1 dose of UH (1.8%) and multiple doses of UH (4.3%) compared with aspirin only (0.9%) ($P<.001$). Additionally, the postoperative hemoglobin decreased significantly more postoperatively with the use of UH ($P<.001$). Aspirin and UH combination therapy did not decrease VTE incidence compared with aspirin monotherapy. Additionally, there was greater perioperative blood loss and an increased rate of blood transfusion in patients receiving UH. On the basis of these findings, the authors do not recommend UH as an additional mode of VTE prophylaxis when prescribing aspirin after elective TJA. © 2018 Slack Incorporated. All rights reserved.

Song C, Sukul D, Seth M, Wohns D, **Dixon SR**, Slocum NK and Gurm HS (2018). "Outcomes after percutaneous coronary intervention in patients with a history of cerebrovascular disease." Circulation: Cardiovascular Interventions 11(6): e006400.

[Full Text](#)

Department of Internal Medicine

Background: Because of shared risk factors between coronary artery disease and cerebrovascular disease, patients with a history of transient ischemic attack (TIA) or stroke are at greater risk of developing coronary artery disease, which may require percutaneous coronary intervention (PCI). However, there remains a paucity of research examining outcomes after PCI in these patients. Methods and Results: We analyzed consecutive patients who underwent PCI between January 1, 2013, and March 31, 2016, at 47 Michigan hospitals and identified those with a history of TIA/stroke. We used propensity score matching to adjust for differences in baseline characteristics and compared in-hospital outcomes between patients with and without a history of TIA/stroke. We compared rates of 90-day readmission and long-term mortality in a subset of patients. Among 98 730 patients who underwent PCI, 10 915 had a history of TIA/stroke. After matching ($n=10\ 618$ per group), a history of TIA/stroke was associated with an increased risk of in-hospital stroke (adjusted odds ratio, 2.04; 95% confidence interval, 1.41–2.96; $P<0.001$). There were no differences in the risks of other in-hospital outcomes. In a subset of patients with postdischarge data, a history of TIA/stroke was associated with increased risks of 90-day readmission (adjusted odds ratio, 1.22; 95% confidence interval, 1.09–1.38; $P<0.001$) and long-term mortality (hazard ratio, 1.23; 95% confidence interval, 1.07–1.43; $P=0.005$). Conclusions: A history of TIA/stroke was common in patients who underwent PCI and was associated with increased risks of in-hospital stroke, 90-day readmission, and long-term mortality. Given the devastating consequences of post-PCI stroke, patients with a history of TIA/stroke should be counseled on this increased risk before undergoing PCI.

Sonoo M, **Menkes DL**, Bland JDP and Burke D (2018). "Nerve conduction studies and EMG in carpal tunnel syndrome: Do they add value?" Clinical Neurophysiology Practice 3: 78-88.

[Full Text](#)

Department of Neurology

This paper summarises the views of four experts on the place of neurophysiological testing (EDX) in patients presenting with possible carpal tunnel syndrome, in guiding their treatment, and in reevaluations. This is not meant to be a position paper or a literature review, and heterogeneous viewpoints are presented. Nerve conduction studies should be performed in patients presenting with possible carpal tunnel syndrome to assist diagnosis, and may need to be repeated at intervals in those managed conservatively. There is evidence that local corticosteroid injection is safe and effective for many patients, thereby avoiding or deferring surgical decompression. All patients should undergo EDX studies before any invasive procedure for CTS (injection or surgery). Needle EMG studies are not obligatory, but may be needed in those with severe disease and those in whom an alternate or concomitant diagnosis is suspected.

Stanhope C, Drake DG, Alber M, Sohn M and **Yan D** (2018). "Validation of scientific RT's SciMoCa Monte Carlo dose calculation algorithm." Medical Physics 45(6): E294-E294.

Department of Radiation Oncology

Stone B, Thibodeau BJ, Baschnagel AM, Fortier LE, Kelley Z, Almradi A, **Wilson GD** and **Jury RP** (2018). "Can gene expression profiling identify pancreatic ductal adenocarcinoma patients with short or long-term prognosis?" Journal of the Pancreas 19(3): 118-125.

[Full Text](#)

Department of Surgery

Department of Radiation Oncology

The ability to identify patients that have disease progression soon after surgical resection could guide treatment as well as aid in the development of novel targeted therapies. This study correlates gene expression and overall survival in patients with pancreatic adenocarcinoma. Methods Patients with pancreatic adenocarcinoma treated with definitive surgery without neoadjuvant therapy were grouped into short-term (<10 months, n=13) and long-term (>20 months, n=11) survivors. Ribonucleic acid was extracted from snap-frozen tissues, and global gene expression was examined. Pathway analysis was also performed. Results The mean overall survival in each group was 7.5 and 32.0 months. We identified 163 genes that were differentially expressed between patients who survived <10 months and >20 months after definitive surgery. Many of the genes identified have known prognostic importance; however, less than half of these genes have been reported to be associated with survival in pancreatic adenocarcinoma. Pathway analysis identified expression targets of SP1, JUN, and EGF to be highly regulated based upon differences in overall survival. Conclusions In pancreatic adenocarcinoma patients who have undergone definitive resection, we have identified multiple genes associated with inferior survival. Many of the genes reported in this study have not previously been linked to overall survival in this patient population.

Sutherland EL, Choromanska A, **Al-Katib S** and Coffey M (2018). "Outcomes of ultrasound guided renal mass biopsies." Journal of Ultrasound 21(2): 99-104.

[Request Form](#)

OUWB Medical Student Author

Department of Diagnostic Radiology and Molecular Imaging

Purpose: The purpose of this study was to evaluate the rate of nondiagnostic ultrasound-guided renal mass biopsies (RMBs) at our institution and to determine what patient, procedural, and focal renal mass (FRM) factors were associated with nondiagnostic ultrasound-guided RMBs. Methods: Eighty-two ultrasound-guided renal mass biopsies performed between January 2014 and October 2016 were included in our study. Biopsy outcomes (diagnostic vs. nondiagnostic) and patient, procedural, and FRM characteristics were retrospectively reviewed and recorded. Univariate statistical analyses were performed to identify biopsy characteristics that were indicative of nondiagnostic biopsy. Results: Ultrasound-guided RMBs were diagnostic in 70 out of 82 cases (85%) and non-diagnostic in 12 cases (15%). Among the diagnostic biopsies, 54 (77%) were malignant cases, 94% of which were renal cell carcinoma (RCC). Of the 12 nondiagnostic cases, the final diagnosis was RCC in 4 cases and angiomyolipoma in one case; seven of the nondiagnostic cases were lost to follow-up. A weak association ($p = 0.04$) was found between the number of needle passes and the biopsy outcome. None of the remaining collected RMB characteristics showed a significant correlation with a diagnostic or nondiagnostic RMB. Six patients (7%) experienced complications. Conclusion: Ultrasound-guided renal mass biopsy is a safe and effective method for the diagnosis of renal masses with a low rate of nondiagnostic outcomes. A nondiagnostic biopsy should not be treated as a surrogate for a diagnosis since a significant number of patients with nondiagnostic biopsies have subsequently been shown to have renal malignancies. Repeat biopsy should be considered in such cases. © 2018, Società Italiana di Ultrasonologia in Medicina e Biologia (SIUMB).

Svider P, **Arianpour K** and Mutchnick S (2018). "Management of epistaxis in children and adolescents: Avoiding a chaotic approach." Pediatric Clinics of North America 65(3): 607-621.

[Full Text](#)

OUWB Medical Student Author

This article provides an organized foundation that facilitates the management of acute epistaxis and an understanding of features that merit further diagnostic workup. Prompt management, including measures such as holding pressure and using nasal packing, takes precedence over comprehensive diagnostic workup.

Severe, recurrent, and posteriorly based bleeds should prompt consideration of alternate interventions and expert consultation.

Svider PF, **Arianpour K, Nguyen B**, Hsueh WD, Langer PD, Eloy JA and Folbe AJ (2018). "Endoscopic and external approaches for orbital decompression: an analysis of trends from a U.S. perspective." [International Forum of Allergy & Rhinology](#) 8(8): 934-938.

[Full Text](#)

OUWB Medical Student Author

Background: Although the endoscopic approach has been increasingly utilized for a variety of sinonasal and skull base pathologies, there has been little inquiry into its adoption in the surgical management of orbital disease. Our objective was to evaluate nationwide temporal and geographic trends in approaches for orbital decompression. Methods: Data available from the Centers for Medicare and Medicaid Services (CMS) were evaluated, focusing on the use of open and endoscopic approaches for orbital decompression (CPT codes 67414, 67445, 31292, and 31293) among Medicare beneficiaries over a 10-year period. Regional data were also analyzed. Results: There were 8047 orbital decompressions billed to Medicare from 2007 to 2016. The number of external and endoscopic approaches increased by 73.0% and 29.2%, respectively, while the number of Medicare beneficiaries increased by 29.1%. Endoscopic decompression represented 23.5% of Medicare-billed orbital decompressions in 2016 (221 of 939), down from 29.2% in 2007 (171 of 586). The South had the greatest proportion of decompressions utilizing an endoscopic approach (30.2%). Conclusion: There has not been a clear movement toward the endoscopic approach for orbital decompression, with modest growth when compared with external approaches. Potential explanations include the specialty-exclusive nature of approaches, as well as a lack of consensus; the latter idea is further reinforced by geographic variation. High-quality prospective trials may clarify the role of endoscopic approaches in these patients.

Tantisattamo E, Vutthikraivit P and Ratanasrimetha P (2018). "Longitudinal weight change in kidney transplant recipients from waiting period to late post-transplantation." [American Journal of Kidney Diseases](#) 71(4): 590-590.
Department of Internal Medicine

Thanos A, Todorich B, Yonekawa Y, Papakostas TD, Khundkar T, Elliott D, Dass AB, **Williams GA, Capone A, Faia LJ, Wolfe JD, Hassan TS and Ruby AJ** (2018). "Dexamethasone intravitreal implant for the treatment of recalcitrant macular edema after rhegmatogenous retinal detachment repair." [Retina](#) 38(6): 1084-1090.

[Full Text](#)

Department of Ophthalmology

Purpose: To investigate the efficacy of the intravitreal dexamethasone implant as the treatment for recalcitrant macular edema after successful rhegmatogenous retinal detachment repair. Methods: A retrospective review of the medical records was performed on 17 consecutive patients (17 eyes) with recalcitrant macular edema associated with rhegmatogenous retinal detachment repair who were treated with a single or multiple injections of an intravitreal dexamethasone 0.7-mg implant (Ozurdex; Allergan Inc) at two centers. Main outcomes of the study were change in logarithm of the minimum angle of resolution visual acuity, measurement of central foveal thickness, and macular cube volume as measured by spectral domain optical coherence tomography and frequency of complications. Results: The mean age was 67 years (range, 51-78 years). All 17 patients received previous topical therapy and 12 of them had previous administration of intravitreal triamcinolone with persistence of macular edema. Baseline mean best-corrected visual acuity was 20/100 (logarithm of the minimum angle of resolution 0.75; range, 0.18-1.3 ±0.37) in the affected eyes. There was a statistically significant improvement in best-corrected visual acuity at 1 month ($P < 0.001$) and 3 months ($P = 0.01$). Mean baseline central foveal thickness was 505 μ m, and mean macular cube volume was 10.62 mm³. There was a statistically significant decrease in central foveal thickness and macular cube volume at 1 month (505-290 μ m, $P = 0.013$ and 10.62-9.13 mm³, $P < 0.0001$) and 3 months ($P = 0.01$). All patients developed recurrence of macular edema at 3 months, which required retreatment. The average number of implants was 4 (range, 1-14). No adverse effects such as retinal detachment or endophthalmitis occurred. Two patients experienced an increase in intraocular pressure that was controlled with topical therapy. Conclusion: Macular edema that occurs in eyes after successful repair of rhegmatogenous retinal detachment can be chronic and recalcitrant, and may be successfully and safely treated with the

dexamethasone intravitreal implant.

Tick H, Nielsen A, Pelletier KR, Bonakdar R, Simmons S, Glick R, Ratner E, Lemmon RL, Wayne P and **Zador V** (2018). "Evidence-based nonpharmacologic strategies for comprehensive pain care: The consortium pain task force white paper." *Explore* 14(3): 177-211.

[Full Text](#)

Department of Family Medicine and Community Health

Medical pain management is in crisis; from the pervasiveness of pain to inadequate pain treatment, from the escalation of prescription opioids to an epidemic in addiction, diversion and overdose deaths. The rising costs of pain care and managing adverse effects of that care have prompted action from state and federal agencies including the DOD, VHA, NIH, FDA and CDC. There is pressure for pain medicine to shift away from reliance on opioids, ineffective procedures and surgeries toward comprehensive pain management that includes evidence-based nonpharmacologic options. This White Paper details the historical context and magnitude of the current pain problem including individual, social and economic impacts as well as the challenges of pain management for patients and a healthcare workforce engaging prevalent strategies not entirely based in current evidence. Detailed here is the evidence-base for nonpharmacologic therapies effective in postsurgical pain with opioid sparing, acute non-surgical pain, cancer pain and chronic pain. Therapies reviewed include acupuncture therapy, massage therapy, osteopathic and chiropractic manipulation, meditative movement therapies Tai chi and yoga, mind body behavioral interventions, dietary components and self-care/self-efficacy strategies. Transforming the system of pain care to a responsive comprehensive model necessitates that options for treatment and collaborative care must be evidence-based and include effective nonpharmacologic strategies that have the advantage of reduced risks of adverse events and addiction liability. The evidence demands a call to action to increase awareness of effective nonpharmacologic treatments for pain, to train healthcare practitioners and administrators in the evidence base of effective nonpharmacologic practice, to advocate for policy initiatives that remedy system and reimbursement barriers to evidence-informed comprehensive pain care, and to promote ongoing research and dissemination of the role of effective nonpharmacologic treatments in pain, focused on the short- and long-term therapeutic and economic impact of comprehensive care practices.

Todorich B, **Faia LJ**, Thanos A, **Amin M**, **Folberg R**, **Wolfe JD**, Todorich KM, Raptis E, **Ruby AJ**, **Williams GA** and **Hassan TS** (2018). "Vancomycin-associated hemorrhagic occlusive retinal vasculitis: A clinical-pathophysiological analysis." *American Journal of Ophthalmology* 188: 131-140.

[Full Text](#)

Department of Ophthalmology

Department of Pathology

Department of Foundational Medical Studies

Purpose: To derive novel insights into the pathophysiology of vancomycin-related hemorrhagic occlusive retinal vasculopathy (HORV) through a careful clinicopathologic correlation. Methods: We retrospectively reviewed the clinical and pathologic course of 2 consecutive patients who developed HORV. The clinical history, multimodal imaging, ultrasound biomicroscopy (UBM), and intraoperative and histologic findings are reported. Results Both patients presented with decreased vision and eye pain within 1 week following otherwise uncomplicated cataract extraction and were diagnosed with HORV after endophthalmitis was ruled out. Both patients presented with significant ocular discomfort that progressively worsened, and both experienced a dismal visual outcome despite early aggressive medical and surgical therapy. One patient requested enucleation for a blind and painful eye. Upon histologic examination of this eye, the iris and ciliary body appeared to be infarcted with separation of the iris and ciliary epithelia from their adjacent stromal components. These findings were corroborated by UBM of the second patient. Histologic examination of the posterior segment demonstrated severe hemorrhagic necrosis of the neurosensory retina and an occlusive nonarteritic vasculopathy of the retina and choroid. The choroid was thickened by prominent nongranulomatous chronic inflammation accompanied by a glomeruloid proliferation of small vessels. The inflammatory infiltrate was almost exclusively confined to the choroid and consisted of predominantly T cells. There was conspicuous absence of inflammatory cells in the retina and no histologic evidence of leukocytoclastic vasculitis. Conclusions: HORV is a rare condition that can lead to profound vision loss. Significant ocular pain can be a presenting sign of HORV in cases with severe iris and ciliary body ischemia.

Although it has been suggested that HORV is a form of leukocytoclastic retinal vasculitis, the histologic findings herein indicate that the pathophysiology is more complex. It is grounded in a necrotizing retinal vasculopathy in the absence of retinal vasculitis, chronic nongranulomatous choroiditis, and an unusual glomeruloid proliferation of endothelial cells in the choroid and elsewhere in the eye.

Todorich B, Stem MS, **Hassan TS, Williams GA and Faia LJ** (2018). "Scleral transillumination with digital heads-up display: A novel technique for visualization during vitrectomy surgery." [Ophthalmic Surgery Lasers and Imaging Retina](#) 49(6): 436-439.

[Request Form](#)

Department of Ophthalmology

Background and Objective: To describe a novel technique of scleral indentation and transillumination for single-surgeon, unassisted vitrectomy and vitreous base shaving enhanced with a digital heads-up display system (NGENUITY 3D Visualization System; Alcon, Fort Worth, TX). **Patients and Methods:** This technique was utilized in six eyes of six patients during vitrectomy surgery for common vitreoretinal surgical diagnoses. In each case, the transillumination was performed with the traditional intraocular light pipe set at 100% power, placed obliquely just posterior to the vitreous base insertion, with or without a transillumination adapter. The visualization of the vitreous cavity was digitally enhanced using a heads-up display system (NGENUITY 3D) with light amplification settings increased to near-maximal gain. In each case, the adequacy of the surgical view was judged intraoperatively by two independent surgeons who shared the same surgical view as the primary surgeon. **Results:** In this series, the surgical view provided by the scleral transillumination was deemed adequate to safely perform surgery in five of six cases. In the one patient in whom this was not the case, vitrectomy was completed using traditional endo-illumination and scleral depression performed by a skilled assistant. Lighter fundus pigmentation, myopia, thin sclera, and absence of dense peripheral media opacities were associated with improved view with scleral transillumination. There were no intraoperative complications. **Conclusion:** Digitally enhanced scleral transillumination affords surgeons another option for safe and effective simultaneous scleral depression and illumination for unassisted peripheral vitrectomy.

Todorich B, Thanos A, Yonekawa Y, Thomas BJ, Abbey AM and **Faia LJ** (2018). "Transconjunctival sutureless intrascleral fixation of secondary intraocular lenses in patients with uveitis." [Ocular Immunology and Inflammation](#) 26(3): 456-460.

[Request Form](#)

Department of Ophthalmology

Purpose: Secondary intraocular lens (IOL) placement in uveitic eyes is challenging. We describe a series of sclerally fixated IOLs using a transconjunctival sutureless (SIS) technique in eyes with history of uveitis. **Methods:** This is an interventional, retrospective, consecutive case series. **Results:** Five patients with a history of well-controlled uveitis were included. All underwent vitrectomy, with removal of residual lens fragments if necessary. All received pre-, intra- and perioperative steroids, which were slowly tapered over the weeks after the surgery. If possible the dislocated IOL was rescued; otherwise, insertion of a new three-piece IOL was made. Postoperatively, all IOLs remained centered and haptics covered by conjunctiva without dislocation, erosion, or scleral thinning. There were no significant complications related to the surgery. Overall, the mean preoperative visual acuity was improved from logMAR 2.09 preoperatively to 0.59 postoperatively, which was statistically significant ($p = 0.015$). All eyes were deemed quiet at follow-up and none required escalation of therapy for long-term uveitis control. **Conclusion:** SIS IOL fixation is a safe and effective option for well-controlled uveitic eyes.

Traylor S, **Bastani A**, Butris-Daut N, **Christensen M**, Marsack P, Rodgers L and **Todd B** (2018). "Are three ports better than one? An evaluation of flow rates using all ports of a triple lumen central venous catheter in volume resuscitation." [The American Journal of Emergency Medicine](#) 36(5): 739-740.

[Full Text](#)

Department of Emergency Medicine

Background: Poiseuille's law states flow rates are directly proportional to the radius to the 4th power and indirectly proportional to the length of a tube. Because of this property, large bore catheters are commonly used in the resuscitation of the critically ill patient. However, there are no studies comparing simultaneous use of all three lumens of a triple lumen (TL) central venous catheter (CVC) with other catheter types. Our objective was to compare the flow rates of normal saline (NS) through various resuscitation catheters against

a TL CVC using all 3 ports. Methods: We performed a blinded prospective observational study of flow rates utilizing multiple resuscitation catheters. Each catheter type was attached to a 1l bag of NS using standard saline tubing and mean time to infuse 1l of normal saline was determined. Three trials each were completed with and without pressure bags. Results: Simultaneous infusion of NS through all ports of a TL CVC demonstrated no statistically significant difference compared to the following catheters: 16ga peripheral venous catheter (PVC) and 6 Fr CVC with pressure bag. The 14 g PVC and 8.5Fr CVC had statistically significant faster flow rates than the TL CVC both with and without a pressure bag. The 6Fr CVC showed significantly faster flow rates than the TL CVC without a pressure bag. Conclusions: Simultaneous use of all 3 ports of a TL CVC generates flow rates comparable to many other commonly used resuscitation catheters.

van Rosendael AR, Maliakal G, Kolli KK, Beecy A, Al'Aref SJ, Dwivedi A, Singh G, Panday M, Kumar A, Ma X, Achenbach S, Al-Mallah MH, Andreini D, Bax JJ, Berman DS, Budoff MJ, Cademartiri F, Callister TQ, Chang H-J, **Chinnaiyan K**, Chow BJW, Cury RC, DeLago A, Feuchtner G, Hadamitzky M, Hausleiter J, Kaufmann PA, Kim Y-J, Leipsic JA, Maffei E, Marques H, Pontone G, Raff GL, Rubinshtein R, Shaw LJ, Villines TC, Gransar H, Lu Y, Jones EC, Peña JM, Lin FY and Min JK (2018). "Maximization of the usage of coronary CTA derived plaque information using a machine learning based algorithm to improve risk stratification; insights from the CONFIRM registry." Journal of Cardiovascular Computed Tomography 12(3): 204-209.

[Full Text](#)

Department of Internal Medicine

Introduction: Machine learning (ML) is a field in computer science that demonstrated to effectively integrate clinical and imaging data for the creation of prognostic scores. The current study investigated whether a ML score, incorporating only the 16 segment coronary tree information derived from coronary computed tomography angiography (CCTA), provides enhanced risk stratification compared with current CCTA based risk scores. Methods: From the multi-center CONFIRM registry, patients were included with complete CCTA risk score information and ≥ 3 year follow-up for myocardial infarction and death (primary endpoint). Patients with prior coronary artery disease were excluded. Conventional CCTA risk scores (conventional CCTA approach, segment involvement score, duke prognostic index, segment stenosis score, and the Leaman risk score) and a score created using ML were compared for the area under the receiver operating characteristic curve (AUC). Only 16 segment based coronary stenosis (0%, 1–24%, 25–49%, 50–69%, 70–99% and 100%) and composition (calcified, mixed and non-calcified plaque) were provided to the ML model. A boosted ensemble algorithm (extreme gradient boosting; XGBoost) was used and the entire data was randomly split into a training set (80%) and testing set (20%). First, tuned hyperparameters were used to generate a trained model from the training data set (80% of data). Second, the performance of this trained model was independently tested on the unseen test set (20% of data). Results: In total, 8844 patients (mean age 58.0 ± 11.5 years, 57.7% male) were included. During a mean follow-up time of 4.6 ± 1.5 years, 609 events occurred (6.9%). No CAD was observed in 48.7% (3.5% event), non-obstructive CAD in 31.8% (6.8% event), and obstructive CAD in 19.5% (15.6% event). Discrimination of events as expressed by AUC was significantly better for the ML based approach (0.771) vs the other scores (ranging from 0.685 to 0.701), $P < 0.001$. Net reclassification improvement analysis showed that the improved risk stratification was the result of down-classification of risk among patients that did not experience events (non-events). Conclusion: A risk score created by a ML based algorithm, that utilizes standard 16 coronary segment stenosis and composition information derived from detailed CCTA reading, has greater prognostic accuracy than current CCTA integrated risk scores. These findings indicate that a ML based algorithm can improve the integration of CCTA derived plaque information to improve risk stratification.

Vetrovec GW, Anderson M, Schreiber T, Popma J, Lombardi W, Maini B, Moller JE, Schäfer A, **Dixon SR**, Hall S, Ohman EM, Mindrescu C, Moses J and O'Neill W (2018). "The cVAD registry for percutaneous temporary hemodynamic support: A prospective registry of Impella mechanical circulatory support use in high-risk PCI, cardiogenic shock, and decompensated heart failure." American Heart Journal 199: 115-121.

[Full Text](#)

Department of Internal Medicine

Management of patients requiring temporary, mechanical hemodynamic support during high- risk percutaneous coronary intervention (PCI) or in cardiogenic shock is rapidly evolving. With the availability of the Impella 2.5, CP, 5.0, LD, and RP percutaneous mechanical circulatory support devices, there is a need for

continued surveillance of outcomes. Three factors underline the importance of a registry for these populations. First, large randomized trials of hemodynamic support, involving cardiogenic shock, are challenging to conduct. Second, there is increasing interest in the use of registries to provide "real-world" experience and to allow the flexibility to evaluate individual patient uses and outcomes. Third, current, large databases have not captured the specific impact of mechanical support treatment of cardiogenic shock. The predecessor to the catheter-based ventricular assist devices registry, known as USpella, began in 2009 with paper data acquisition but beginning in 2011 transferred to electronic data capture, enrolling 3,339 patients through 2016. Throughout, registry data have been used to assess the outcomes of Impella therapy, leading to 8 publications and 4 Food and Drug Administration premarket approvals covering multiple indications and Impella devices. Going forward, the registry will continue to assess not only in-hospital outcomes but long-term follow-up to 1 year. In addition, data management will be enhanced to assess quality and clinical experiences. The registry will also provide a mechanism for postmarketing surveillance. This manuscript reviews the ongoing catheter-based ventricular assist devices registry design, management, and contributions of the registry data. The upgraded registry will provide a more robust opportunity to assess acute and late outcomes of current and future device use worldwide. Condensed abstract The current catheter-based ventricular assist devices registry is an international database documenting outcomes with temporary Impella hemodynamic support. The registry has supported 8 publications and 4 Food and Drug Administration premarket approvals since its inception in 2009. The current registry is more robust containing outcomes up to 1 year postprocedure.

Vu CC, **Lanni TB** and **Nandalur SR** (2018). "Trends in medicare reimbursement and work relative value unit production in radiation oncology." Journal of the American College of Radiology 15(6): 870-875.

[Full Text](#)

Department of Radiation Oncology

Purpose: Medicare payments to individual physicians are released annually by the CMS. The purpose of this study is to analyze trends in Medicare reimbursement and work relative value unit (wRVU) production to radiation oncologists. Materials and Methods: The Medicare Physician Supplier and Other Provider Public Use File and the CMS Physician Fee Schedule Relative Value Files (to calculate wRVUs) for the calendar years 2012 to 2015 were used in this analysis. Medicare reimbursement was aggregated for each calendar year. Using the CMS Physician Fee Schedule Relative Value Files, the number of Medicare wRVUs was calculated for each radiation oncologist. Results: In 2015, 4,323 radiation oncologists produced 12,895,298 wRVUs compared with 11,352,286 wRVUs produced in 2012. These datasets include only Medicare reimbursements and do not include wRVUs from private insurance or other payers. In 2015, radiation oncologists produced a median of 2,486 wRVUs from Medicare (range 3 to 24,349). Billing to Healthcare Common Procedure Coding System Code 77427 (radiation treatment management, five treatments), a proxy for total radiation treatments, fell from 1,111,670 in 2012 to 1,039,403 in 2015, a decline of 7%. Conclusion: The total number of wRVUs produced by radiation oncologists has risen by 14% from 2012 to 2015. However, the number of external beam radiation fractions has declined by approximately 7% over this same period, likely due to a trend toward hypofractionated courses of treatment and use of special treatment modalities such as proton beam therapy or stereotactic body radiation therapy.

Wang L, Pai A and **Maddens ME** (2018). "The pee, or not the pee, that is the question: Over-diagnosis of urinary tract infections among skilled nursing facility residents re-admitted to hospital within 30 days of hospital discharge." Journal of the American Geriatrics Society 66: S288-S288.

Department of Internal Medicine

Ward N, Baqai J, Zehnpfennig A, Fine N, **Huang J** and **Smith MD** (2018). "Bcl-2 maturation pattern in T-cells distinguishes thymic neoplasm/hyperplasia, T-lymphoblastic lymphoma, and reactive lymph nodes." Cytometry Part B: Clinical Cytometry 94(3): 444-450.

[Full Text](#)

Department of Pathology

Anterior mediastinal biopsies consisting predominantly of small lymphocytes can be a diagnostic challenge, especially in small core biopsies. In these cases, immunophenotyping is often employed using flow cytometry, and/or immunohistochemistry. However, due the overlap in T-cell phenotype between thymic

neoplasm/hyperplasia (THY), T-lymphoblastic lymphoma (T-LBL), and reactive lymph nodes (RLN), biopsies consisting predominantly of T-cells may still be difficult to differentiate. Previous studies have shown a specific CD3/bcl-2 staining pattern in thymic T cells of humans and mice using flow cytometry. However, the utility of this finding in distinguishing T-cells of THY, T-LBL, and RLN has not been carefully evaluated. Our findings show that the pattern of CD3/bcl-2 expression in thymic T-cells can be used to help diagnose anterior mediastinal biopsies, even when limited specimen is provided.

Wasserman JA and Navin MC (2018). "Capacity for preferences respecting patients with compromised decision-making." Hastings Center Report 48(3): 31-39.

[Full Text](#)

Department of Foundational Medical Studies

Weir-Mccall JR, Blanke P, Sellers SL, Ahmadi AA, Andreini D, Budoff MJ, Cademartiri F, **Chinnaiyan K**, Choi JH, Chun EJ, Conte E, Gottlieb I, Hadamitzky M, Kim YJ, Lee BK, Lee SE, Maffei E, Marques H, Pontone G, **Raff GL**, Shin S, Sung JM, Stone P, Samady H, Virmani R, Narula J, Berman DS, Shaw LJ, Bax JJ, Lin FY, Min JK, Chang HJ and Leipsic JA (2018). "Impact of Non-obstructive left main disease on the progression of coronary artery disease: A PARADIGM substudy." Journal of Cardiovascular Computed Tomography 12(3): 231-237.

[Full Text](#)

Department of Internal Medicine

Background: The aim of the study is examine the impact of non-obstructive (< 50% stenosis) left main (LM) disease on the natural history of coronary artery disease using serial coronary computed tomography angiography (CTA). Methods: CTAs from the PARADIGM (Progression of atherosclerotic plaque determined by computed tomographic angiography imaging) study, a prospective multinational registry of patients who underwent serial CTA at a >= 2 year interval were analyzed. Those without evidence of CAD on their baseline scan were excluded, as were those with obstructive left main disease. Coronary artery vessels and their branches underwent quantification of: plaque volume and composition; diameter stenosis; presence of high-risk plaque. Results: Of 944 (62 +/- 9 years, 60% male) who had evidence of CAD at baseline, 444 (47%) had LM disease. Those with LM disease had a higher baseline plaque volume (194.8 +/- 221 mm³ versus 72.9 +/- 84.3 mm³, p < 0.001) and a higher prevalence of high-risk plaque (17.5% versus 13%, p < 0.001) than those without LM disease. On multivariable general linear model, patients with LM disease had greater annual rates of progression of total (26.5 +/- 31.4mm³/yr versus 14.9 +/- 20.1mm³/yr, p < 0.001) and calcified plaque volume (17 +/- 24mm³/yr versus 7 +/- 11mm³/yr, p < 0.001), with no difference in fibrous, fibrofatty or necrotic core plaque components. Conclusion: The presence of non-obstructive LM disease is associated with greater rates of plaque progression and a higher prevalence of high-risk plaque throughout the entire coronary artery tree compared to CAD without LM involvement. Our data suggests that non-obstructive LM disease may be a marker for an aggressive phenotype of CAD that may benefit from more intensive treatment strategies.

Wilhelm SK, Henrichsen JL, Siljander M, **Moore D** and **Karadsheh M** (2018). "Polyethylene in total knee arthroplasty: Where are we now?" Journal of Orthopaedic Surgery 26(3).

[Full Text](#)

OUWB Medical Student Author

Department of Orthopedic Surgery

Polyethylene (PE) remains the gold standard for the articulating surface in hip and knee arthroplasty. To increase arthroplasty longevity and improve wear resistance, newer versions of PE have been designed with resultantly different wear properties. Highly cross-linked polyethylene (HXLPE) is used in total hip arthroplasty with excellent outcomes; however, its use in total knee arthroplasty (TKA) remains conflicting. This review summarizes biomechanical and wear properties, clinical outcomes, and cost of polyethylene inserts in TKA. Simulation studies have convincingly shown decreased wear and oxidation rates with HXLPE when compared to conventional polyethylene (CPE). Registry results have been conflicting, and short- to midterm clinical studies have not demonstrated a significant difference between HXLPE and CPE. The cost of HXLPE inserts is higher than CPE. Long-term clinical data are lacking and further studies are warranted to evaluate the role of HXLPE in TKA.

Willner C and **Bozyk PD** (2018). "A risk-factor derived, equation-based approach as a predictor for severe sepsis/septic shock and associated clinical outcomes." [American Journal of Respiratory and Critical Care Medicine](#) 197: 2.

[Full Text](#)

Department of Internal Medicine

Willner CA, **Bozyk PD** and Rizk M (2018). "Feel the squeeze: Cerebral vasospasm in high-grade lymphoma." [American Journal of Respiratory and Critical Care Medicine](#) 197: 2.

[Full Text](#)

Department of Internal Medicine

Willner CA and **Chisti MM** (2018). "Treatment of bleeding diathesis associated with a heparin-like anticoagulant in plasma cell neoplasia using protamine." [Case Reports in Hematology](#) 2018: 4342301-4342301.

[Full Text](#)

Department of Internal Medicine

The development of a heparin-like anticoagulant (HLAC) in plasma cell neoplasia has previously been described in clinical literature. Testing of this HLAC, primarily in vitro, has demonstrated that neutralization may be achieved with protamine sulfate, owing to antithrombin III cofactor activity. We report a case in which intravenous protamine sulfate was administered to a patient with IgG-kappa monotypic multiple myeloma, which resulted in resolution of bleeding and coagulopathy, confirmed via objective laboratory data. Our case is intended to demonstrate that intravenous protamine sulfate should be considered in acute bleeding with plasma cell neoplasia. We review the literature to observe past experiences about this phenomenon. We postulate that chemotherapy, targeted therapies, and immunotherapies may also disrupt production of a HLAC. With further investigation, this strategy could be applicable in other hematological malignancies with bleeding diathesis, chiefly if the pathophysiology of the HLAC is precisely defined.

Wilson CM and **Barnes C** (2018). "Physical therapy in interdisciplinary palliative care and hospice teams." [Rehabilitation Oncology](#) 36(2): 143-145.

[Full Text](#)

Department of Internal Medicine

Wilson GD, Galoforo S, Blas KG, Wilson TG, Hana A, Dabjan M and Marples B (2018). "Targeting single and multiple cell signaling pathways in combination with radiation in head and neck cancer." [International Journal of Radiation Oncology Biology Physics](#) 100(5): 1375-1375.

Department of Radiation Oncology

Wilson GD, Johnson MD, Ahmed S, Cardenas PY, **Grills IS** and Thibodeau BJ (2018). "Targeted DNA sequencing of non-small cell lung cancer identifies mutations associated with brain metastases." [Oncotarget](#) 9(40): 25957-25970.

[Full Text](#)

Department of Radiation Oncology

Introduction: This study explores the hypothesis that dominant molecular oncogenes in non-small cell lung cancer (NSCLC) are associated with metastatic spread to the brain. Methods: NSCLC patient groups with no evidence of metastasis, with metastatic disease to a non-CNS site, who developed brain metastasis after diagnosis, and patients with simultaneous diagnosis of NSCLC and metastatic brain lesions were studied using targeted sequencing. Results: In patients with brain metastasis versus those without, only 2 variants (one each in BCL6 and NOTHC2) were identified that occurred in ≥ 4 NSCLC of patients with brain metastases but ≤ 1 of the NSCLC samples without brain metastases. At the gene level, 20 genes were found to have unique variants in more than 33% of the patients with brain metastases. When analyzed at the patient level, these 20 genes formed the basis of a predictive test to discriminate those with brain metastasis. Further analysis showed that PI3K/AKT signaling is altered in both the primary and metastases of NSCLC patients with brain lesions. Conclusion: While no single variant was associated with brain metastasis, this study describes a potential gene panel for the identification of patients at risk and implicates PI3K/AKT signaling as a therapeutic target.

Wood EH, **Drenser KA** and Hariprasad SM (2018). "Genetic testing for retina specialists." [Ophthalmic Surgery Lasers and Imaging Retina](#) 49(5): 292-295.

[Full Text](#)

Department of Ophthalmology

Wu MP, Luo HL, Weng SF, Ho C-H, **Chancellor MB** and Chuang YC (2018). "Risk of urinary tract carcinoma among subjects with bladder pain syndrome/interstitial cystitis: A nationwide population-based study." [BioMed Research International](#) 2018: 7495081-7495081.

[Full Text](#)

Department of Urology

Objective: To investigate the subsequent risks of urinary tract cancers among individuals with bladder pain syndrome/interstitial cystitis (BPS/IC), and gender differences, as well as the effect of associated comorbidity using a population-based administrative database in Taiwan. Patients and Methods: BPS/IC subjects (10192) and their age- and sex-matched non-BPS/IC control subjects (30576), who had no previous upper urinary tract cancer (UUC), bladder cancer (BC), and prostate cancer (PC), subsequently developed these disorders from the recruited date between 2002 and 2008 and the end of follow-up 2011. A Cox proportional hazards regression model was constructed to estimate the risk of subsequent UUC, BC, and PC following a diagnosis of IC/BPS. The effect of associated comorbidities was measured by Charlson Comorbidity Index (CCI). The risk of outcomes was assessed with Kaplan-Meier curves. Results: In the BPS/IC subjects, 37 (0.36%) received a diagnosis of BC, and 22 (0.22%) received a diagnosis of UUC; both were significantly higher than the control group, 19 (0.06%) for BC and 30 (0.10%) for UUC. Cox proportional analysis revealed that the adjusted HR for BC and UUC during the follow-up period for patients with IC/BPS was 5.44 (95% CI: 3.10-9.54) and 1.97 (95% CI: 1.13-3.45) than that of comparison subjects. The HRs went up to 5.66 (95% CI: 3.21-9.99) and 2.01 (95% CI: 1.14-3.55) after adjusted by Comorbidity Index (CCI). The male BPS/IC patients have a higher adjusted HR for BC; however, female patients have a higher adjusted HR for both BC and UUC. The adjusted HR for PC has no difference between BPS/IC and control group. Conclusion: Patients with BPS/IC are at risk of developing BC in both males and females, and UUC in females. This result reminds physicians to evaluate the potential risk of subsequent development of BC and UUC among individuals with BPS/IC.

Yadav S, Sharma P and **Zakalik D** (2018). "Comparison of demographics, tumor characteristics, and survival between pancreatic adenocarcinomas and pancreatic neuroendocrine tumors: A population-based study." [American Journal of Clinical Oncology](#) 41(5): 485-491.

[Full Text](#)

Department of Internal Medicine

Objective: The objective of this study is to compare the incidence, demographics, tumor characteristics, and survival between patients with pancreatic neuroendocrine tumors (PNETs) and pancreatic adenocarcinomas. Materials and Methods: Between 2004 and 2012, all cases of pancreatic adenocarcinomas and PNETs were extracted from the population-based cancer registries of the Surveillance Epidemiology and End Results program. To identify the cases, a combination of topographical and histology codes based on ICD-O-3 were used. Incidence, demographics, tumor characteristics, and survival was then compared between these 2 histologic subtypes of pancreatic cancer. Results: A total of 57,688 patients with pancreatic cancer were identified, of which 53,753 (93%) had pancreatic adenocarcinoma and 3935 (7%) had PNET. The overall age-adjusted incidence of PNETs between 2004 and 2012 was 0.52 per 100,000 per year, whereas that for pancreatic adenocarcinomas during the same period was 7.34 per 100,000 per year. PNETs had a significantly younger median age at diagnosis (61 vs. 69 y). A significant proportion of PNETs were diagnosed at stage I (20.5% vs. 6.0%) and were well differentiated (32.8% vs. 4.5%) compared with adenocarcinomas. Five-year cause-specific survival was 51.3% and 5.0% for PNETs and pancreatic adenocarcinomas, respectively. In multivariate analysis, pancreatic adenocarcinomas had a hazard ratio for death of 4.02 (95% confidence interval, 3.79-4.28) when compared with PNETs. Conclusions: PNETs present with favorable features such as higher proportion of early-stage tumor, higher proportion of well differentiated tumors, and younger age at diagnosis. PNETs have a significantly better survival than pancreatic adenocarcinomas even after adjusting for age, sex, race, site, grade, and stage.

Yonekawa Y, Wu WC, Nitulescu CE, Chan RVP, Thanos A, Thomas BJ, Todorich B, **Drenser KA**, **Trese MT** and **Capone**

A (2018). "Progressive retinal detachment in infants with retinopathy of prematurity treated with intravitreal bevacizumab or ranibizumab." Retina 38(6): 1079-1083.

[Full Text](#)

Department of Ophthalmology

Purpose: Fibrovascular contraction and tractional retinal detachment (TRD) are recognized complications associated with the use of anti-vascular endothelial growth factor agents in vasoproliferative vitreoretinopathies. The authors characterize TRDs that developed after intravitreal bevacizumab or ranibizumab therapy for vascularly active retinopathy of prematurity. Methods: This is an international, multicenter, interventional, retrospective, case series. Thirty-five eyes from 23 infants were included. Inclusion required anti-vascular endothelial growth factor treatment of Type 1 retinopathy of prematurity with progression to TRD. Results: Mean gestational age was 26 ± 2 weeks, and mean birth weight was 873 ± 341 g. Mean postmenstrual age on the day of injection was 35 ± 2 weeks. Retinal detachment was noted a mean of 70 days (median, 34; range, 4-335) after injection. Eleven percent detached within 1 week, 23% within 2 weeks, and 49% within 4 weeks. The highest stage of retinopathy of prematurity noted was 4A in 29%, 4B in 37%, and 5 in 34% of eyes. Time to RD negatively correlated with postmenstrual age at the time of injection ($Rho = -0.54$; $P < 0.01$). Three TRD configurations were observed: 1) conventional peripheral elevated ridge or volcano-shaped Stage 5 detachment, 2) midperipheral detachment with tight circumferential vectors, and 3) very posterior detachment with prepapillary contraction. Full or partial reattachment was achieved with surgical intervention in 86% of eyes. Conclusion: Progressive atypical TRD may occur after anti-vascular endothelial growth factor injections for retinopathy of prematurity. The configuration of the detachment varies with the extent of primary retinal vascularization present at the time of treatment.

Zhang X, Chen L, Liu Y, Xu Y, Zhang X, Shi Y, Wang C, **Zhang PL** and Liu Y (2018). "Improving the cytological diagnosis of high-grade serous carcinoma in ascites with a panel of complementary biomarkers in cell blocks." Cytopathology 29(3): 247-253.

[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.

Zhong Y, Vinogradskiy Y, Chen L, Myziuk N, Castillo R, Castillo E, **Guerrero T**, Jiang S and Wang J (2018). "Deriving ventilation imaging from 4DCT by deep convolutional neural network." Medical Physics 45(6): E155-E155.

Department of Radiation Oncology

Zhou J, Li X, **Kabolizadeh P**, Liang J, **Yan D**, Stevens C and Ding X (2018). "A novel proton computed tomography acquisition and reconstruction based on the pencil beam scanning spot and energy decomposition technique." Medical Physics 45(6): E429-E430.

Department of Radiation Oncology