

OAKLAND UNIVERSITY WILLIAM BEAUMONT SCHOOL OF MEDICINE

PUBLICATION LIST

October - December 2018

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Ali-Ahmed F, Goyal V, Patel M, **Orelaru F, Haines DE** and Wong WS (2018). "High-power, low-flow, short-ablation duration—the key to avoid collateral injury?" *Journal of Interventional Cardiac Electrophysiology*. ePub Ahead of Print.
[Full Text](#)

Department of Internal Medicine
OUWB Medical Student Author

A common approach to ablating along the posterior wall of the left atrium in atrial fibrillation ablation is to use low power with longer duration for durable lesions and reducing thermal injury. We hypothesize that similar lesions can be safely obtained at high power with low open-irrigation flow and low duration.

Anderson M, Morris DL, Tang D, Batsides G, Kirtane A, **Hanson I**, Meraj P, Kapur NK and O'Neill W (2018). "Outcomes of patients with right ventricular failure requiring short-term hemodynamic support with the Impella RP device." *Journal of Heart and Lung Transplantation* 37(12): 1448-1458.
[Full Text](#)

Department of Internal Medicine

Background: Right ventricular failure (RVF) after myocardial infarction, cardiomyopathy, or left ventricular assist device (LVAD) implantation increases morbidity and mortality. RVF also contributes to prolonged length of hospital stay and higher costs of care. The aim of this study was to evaluate the efficacy and safety of the Impella RP (Abiomed, Danvers, MA) in patients with severe RVF in these clinical settings. Methods: This is a prospective cohort study of patients with severe RVF treated with a percutaneous right ventricular assist device (RVAD). Sixty patients with RVF refractory to medical treatment received the Impella RP device at 14 United States institutions as part of the Impella RP pre- and post-market approval studies. The study population included 2 cohorts: Cohort A, patients with RVF post-(LVAD) implantation (n = 31); and Cohort B, patients with RVF post-cardiotomy, heart transplant, or myocardial infarction (n = 29). The primary end-point was survival at 30 days or hospital discharge (whichever was longer). Results: Mean age of patients was 59 ± 15 years; 68% were males, 84% had a history of congestive heart failure, 44% had valvular disease, and 35% had pre-operative renal dysfunction. Patients received an average of 3.4 inotropes/vasopressors before the Impella RP implant. Patients were supported with the Impella RP for 4.0 ± 1.5 (0.5 to 14) days. Hemodynamics improved immediately after initiation of device support, with an increase in cardiac index

from 1.9 ± 0.1 to 3.1 ± 0.2 liters/min/m² ($p < 0.001$) and a decrease in central venous pressure from 19.0 ± 1 to 13 ± 1 mm Hg ($p < 0.001$). The overall survival at 30 days (or discharge) was 72%. Conclusions: To the best of our knowledge, this study represents the largest prospective study of patients with life-threatening RVF. Mechanical support with the Impella RP device in patients with RVF resulted in rapid hemodynamic improvement with reversal of shock and favorable survival.

Arden JD, Johnson MD, Ye H, Marvin K, Maitz A, **Fahim D, Jacob J**, Ducharme E, Manders MD, **Chinnaiyan P, Chen PY** and **Grills IS** (2018). "Quality of life, survival, and recurrence patterns following adjuvant stereotactic radiosurgery for resected brain metastases." International Journal of Radiation Oncology Biology Physics 102(3): E194-E194.

Department of Neurosurgery

Department of Radiation Oncology

OUWB Medical Student Author

[Full Text](#)

Attardi SM, Barbeau ML and Rogers KA (2018). "Improving online interactions: Lessons from an online anatomy course with a laboratory for undergraduate students." Anatomical Sciences Education 11(6): 592-604.

[Full Text](#)

Department of Foundational Medical Studies

An online section of a face-to-face (F2F) undergraduate (bachelor's level) anatomy course with a prosection laboratory was offered in 2013–2014. Lectures for F2F students (353) were broadcast to online students (138) using Blackboard Collaborate (BBC) virtual classroom. Online laboratories were offered using BBC and three-dimensional (3D) anatomical computer models. This iteration of the course was modified from the previous year to improve online student–teacher and student–student interactions. Students were divided into laboratory groups that rotated through virtual breakout rooms, giving them the opportunity to interact with three instructors. The objectives were to assess student performance outcomes, perceptions of student–teacher and student–student interactions, methods of peer interaction, and helpfulness of the 3D computer models. Final grades were statistically identical between the online and F2F groups. There were strong, positive correlations between incoming grade average and final anatomy grade in both groups, suggesting prior academic performance, and not delivery format, predicts anatomy grades. Quantitative student perception surveys (273 F2F; 101 online) revealed that both groups agreed they were engaged by teachers, could interact socially with teachers and peers, and ask them questions in both the lecture and laboratory sessions, though agreement was significantly greater for the F2F students in most comparisons. The most common methods of peer communication were texting, Facebook, and meeting F2F. The perceived helpfulness of the 3D computer models improved from the previous year. While virtual breakout rooms can be used to adequately replace traditional prosection laboratories and improve interactions, they are not equivalent to F2F laboratories.

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(11): 1288-1300.

[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 EvaluationN 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.

Barmettler A, **Gladstone GJ**, Wang J and Heo M (2018). "Upper eyelid blepharoplasty: A novel method to predict and improve outcomes." *Aesthetic Surgery Journal* 38(11): NP156-NP164.

[Full Text](#)

Department of Ophthalmology

In some upper eyelid blepharoplasties, maximal skin removal may not result in desired outcomes; raising crease height can therefore be considered. Currently, there is no method to determine the amount of skin to be excised and/or crease elevation required to achieve a specific outcome. This study extrapolated an equation to determine amount of skin excision and/or lid crease elevation needed to achieve a specific eyelid margin to fold distance (MFD). This institutional review board-approved, HIPAA-compliant study was a prospective, nonrandomized clinical trial. Patients were included if aged 30 to 100 years old and underwent upper eyelid blepharoplasty with one surgeon between 2012 and 2014. Exclusion criteria were thyroid eye disease, myasthenia gravis, myotonic dystrophy, pregnancy, blepharoptosis, prior eyelid surgery or trauma, concurrent brow surgery, and topical alpha-agonists. The following data were collected preoperatively and at postoperative months 1 and 6: age, gender, BMI, brow position, MFD, margin to crease distance (distance between eyelid margin and crease, MCD), and vertical skin distance (distance between eyelid margin and brow, VSD). A total 322 eyelids of 164 patients underwent 208 skin excisions, 26 crease elevations, and 88 combined skin excision and crease elevation. Age, gender, and BMI category were all nonsignificant and excluded from the final model. This equation was extrapolated with regression analysis: Change in MFD = $-0.40 + (-0.28 \times \text{Change VSD}) + (0.53 \times \text{Change MCD})$ with $|R| = 0.28$. To better predict and obtain desired upper eyelid blepharoplasty outcomes, the authors created an equation.

Bastani A, Su E, Adler DH, Baugh C, Caterino JM, **Clark CL**, Diercks DB, Hollander JE, Malveau SE, Nicks BA, Nishijima DK, Shah MN, Stiffler KA, Storrow AB, Wilber ST, Yagapen AN, Weiss RE and Sun BC (2018). "Comparison of 30-Day serious adverse clinical events for elderly patients presenting to the emergency department with near-syncope versus syncope." *Annals of Emergency Medicine* 73(3): 274-280.

[Full Text](#)

Department of Emergency Medicine

Study Objective: Controversy remains in regard to the risk of adverse events for patients presenting with syncope compared with near-syncope. The purpose of our study is to describe the difference in outcomes between these groups in a large multicenter cohort of older emergency department (ED) patients. Methods: From April 28, 2013, to September 21, 2016, we conducted a prospective, observational study across 11 EDs in adults (≥ 60 years) with syncope or near-syncope. A standardized data extraction tool was used to collect information during their index visit and at 30-day follow-up. Our primary outcome was the incidence of 30-day death or serious clinical events. Data were analyzed with descriptive statistics and multivariate logistic regression analysis adjusting for relevant demographic or historical variables. Results: A total of 3,581 patients (mean age 72.8 years; 51.6% men) were enrolled in the study. There were 1,380 patients (39%) presenting with near-syncope and 2,201 (61%) presenting with syncope. Baseline characteristics revealed a greater incidence of congestive heart failure, coronary artery disease, previous arrhythmia, nonwhite race, and presenting dyspnea in the near-syncope compared with syncope cohort. There were no differences in the primary outcome between the groups (near-syncope 18.7% versus syncope 18.2%). A multivariate logistic regression analysis identified no difference in 30-day serious outcomes for patients with near-syncope (odds ratio 0.94; 95% confidence interval 0.78 to 1.14) compared with syncope. Conclusion: Near-syncope confers risk to patients similar to that of syncope for the composite outcome of 30-day death or serious clinical event.

Berkowitz BA, **Podolsky RH**, Qian HH, Li YC, Jiang K, Nellissery J, Swaroop A and Roberts R (2018). "Mitochondrial respiration in outer retina contributes to light-evoked increase in hydration in vivo." *Investigative Ophthalmology &*

Visual Science 59(15): 5957-5964.

[Full Text](#)

Department of Biomedical Sciences

Purpose: To test the hypothesis that mitochondrial respiration contributes to local changes in hydration involved in phototransduction-driven expansion of outer retina, as measured by structural responses on optical coherence tomography (OCT) and diffusion magnetic resonance imaging (MRI). Methods: Oxygen consumption rate and mitochondrial reserve capacity of freshly isolated C57BL/6 and 129S6/SvEvTac mouse retina were measured using a Seahorse Extracellular Flux Analyzer. Light-stimulated outer retina layer water content was determined by proton density MRI, structure and thickness by ultrahigh-resolution OCT, and water mobility by diffusion MRI. Results: Compared with C57BL/6 mice, 129S6/SvEvTac retina demonstrated a less robust mitochondrial respiratory basal level, with a higher reserve capacity and lower oxygen consumption in the light, suggesting a relatively lower production of water. C57BL/6 mice showed a light-triggered surge in water content of outer retina in vivo as well as an increase in hyporeflective bands, thickness, and water mobility. In contrast, light did not evoke augmented hydration in this region or an increase in hyporeflective bands or water mobility in the 129S6/SvEvTac outer retina. Nonetheless, we observed a significant but small increase in outer retinal thickness. Conclusions: These studies suggest that respiratory-controlled hydration in healthy retina is linked with a localized light-evoked expansion of the posterior retina in vivo and may serve as a useful biomarker of the function of photoreceptor/retinal pigment epithelium complex.

Bhatt DR, Kristensen-Cabrera AI, Lee HC, Weerasinghe S, Stevenson DK, Bhutani VK, **Maisels MJ** and Ramanathan R (2018). "Transcutaneous bilirubinometer use and practices surrounding jaundice in 150 California newborn intensive care units." Journal of Perinatology 38(11): 1532-1535.

[Full Text](#)

Department of Pediatrics

Transcutaneous bilirubin measurements (TcBs) provide a noninvasive method for screening infants for hyperbilirubinemia and have been used extensively in term and late preterm newborns in well baby nurseries, offices, and outpatient clinics. Several studies have also demonstrated the utility of TcBs as a screening tool for infants > 28 weeks' gestation and their ability to reduce the need for blood sampling. The objectives of this study are to identify how often TcBs are used among California Newborn Intensive Care Units (NICUs) in preterm, late preterm and term infants, and other aspects of jaundice management.

Bloomingdale R, Walters HL, Mertens A, Ramos R, **Gallagher M**, Forbes TJ and Kobayashi D (2018). "Coronary sinus stenosis with right coronary artery to coronary sinus fistula." The Annals of Thoracic Surgery. ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine

Coronary artery fistula is a rare congenital cardiac anomaly. We report a 34-year-old female who presented with a recurrent large pericardial effusion during pregnancy. She was found to have a right coronary artery to coronary sinus fistula. The coronary sinus was severely dilated due to coronary sinus ostial stenosis. Primary surgical closure of coronary artery fistula was performed with resection of coronary sinus ostial stenosis.

Boike TP, Griffith K, Jagsi R, Moran JM, Radawski J, **Dilworth JT**, Dominello MM, Hayman JA, Vicini FA and Pierce LJ (2018). "Utilization and toxicity of breast boost radiation therapy following hypofractionated whole breast irradiation: comparative analysis of a large, statewide multicenter cohort." International Journal of Radiation Oncology Biology Physics 102(3): E581-E582.

Department of Radiation Oncology

Purpose/Objective(s): Little is known about current patterns of breast boost radiotherapy (boost) use or its acute toxicity, especially after hypofractionated whole breast irradiation (H-WBI), now the recommended regimen for most node-negative patients. We evaluated prospectively collected data from a statewide multicenter cohort to understand factors associated with utilization and acute toxicity of boost after H-WBI. Materials/Methods: We analyzed patients within our database from 2012 to 2017. 6,133 women were evaluable from 23 radiation oncology clinics. We excluded patients with nodal treatment (15.3%), and missing demographic/treatment/toxicity information (8.4%). Of the remaining 4,761 women, 2,409 women

received H-WBI and constituted the analytic sample. Sociodemographic, clinical, and treatment characteristics were analyzed for association with the use of boost. Patients and physicians reported toxicity weekly during treatment and at the end of treatment -4/+7 days (EOT). Maximal toxicity from the first three weeks of treatment was compared to toxicity at the EOT for patients receiving boost and not. We additionally created a multiple variable model of the association between boost receipt and toxicity, adjusting for age, race, comorbidities, smoking status, nodal disease, chemotherapy, endocrine therapy, separation distance, breast volume, and use of IMRT for the H-WBI. Results: Of the 2,409 women, 19% were treated without boost and 81% received boost. The most common H-WBI regimens utilized were 42.56 Gy/16 fractions (80% of cases) and 40 Gy/15 fractions (10% of cases). The most common boost regimens were 10-10.64 Gy/4 fractions (51%), 10 Gy/5 fractions (31%), or 12 Gy/6 fractions (8%). Boost was delivered less often in women with increasing age and comorbidities. The percent of women receiving boost was 79% for age 51-60, 66% for age 61-70, and 48% for age greater than 71. Patients with close margins, positive margins, ER negative disease, Her2 positive disease, African Americans, and women having received chemotherapy were more likely to receive boost. Maximal pain scores were similar between boost and non-boost cases up to 3 weeks (OR = 0.95, 95% CI: 0.68 – 1.34), $p=0.786$, yet statistically different at EOT (OR=1.52, 95% CI: 1.10 – 2.12), $p=0.012$ when adjusted for important confounders. At EOT, moderate/severe pain was reported in 11.0% of non-boost cases and 19.5% of boost cases. Conclusion: In this large, multi-center cohort, treatment with boost was used frequently in conjunction with H-WBI and personalized based on patient characteristics. The observed differences in acute toxicity constitute relevant considerations in decision-making about boost use (especially in the large group for whom current consensus guidelines make no clear recommendation), in conjunction with existing evidence regarding efficacy, long term side effects, and cost.

Brescia AA, Syrjamaki JD, Regenbogen SE, Paone G, Pruitt AL, **Shannon FL**, Boeve TJ, Patel HJ, Thompson MP, Theurer PF, Dupree JM, Kim KM, Prager RL and Likosky DS (2018). "Transcatheter versus surgical aortic valve replacement episode payments and relationship to case volume." *Annals of Thoracic Surgery* 106(6): 1735-1741.

[Full Text](#)

Department of Surgery

Background: Transcatheter aortic valve replacement (TAVR) has increased in volume as an alternative to surgical aortic valve replacement (SAVR). Comparisons of total episode expenditures, although largely ignored thus far, will be key to the value proposition for payers. Methods: We evaluated 6,359 Blue Cross Blue Shield of Michigan and Medicare fee-for-service beneficiaries undergoing TAVR (17 hospitals, $n = 1,655$) or SAVR (33 hospitals, $n = 4,704$) in Michigan between 2012 and 2016. Payments through 90 post-discharge days between TAVR and SAVR were price-standardized and riskadjusted. Centers were divided into terciles of procedural volume separately for TAVR and SAVR, and payments were compared between lowest and highest terciles. Results: Payments (+/- SD) were higher for TAVR than SAVR (\$69,388 +/- \$22,259 versus \$66,683 +/- \$27,377, $p < 0.001$), while mean hospital length of stay was shorter for TAVR (6.2 +/- 5.6 versus 10.2 +/- 7.5 days, $p < 0.001$). Index hospitalization payments were \$4,374 higher for TAVR ($p < 0.001$), whereas readmission and post-acute care payments were \$1,150 ($p = 0.001$) and \$739 ($p = 0.004$) lower, respectively, and professional payments were similar. For SAVR, high-volume centers had lower episode payments (difference: 5.0%, \$3,255; $p = 0.01$) and shorter length of stay (10.0 +/- 7.5 versus 11.1 +/- 7.9 days, $p = 0.002$) than low volume centers. In contrast, we found no volume-payment relationship among TAVR centers. Conclusions: Episode payments were higher for TAVR, despite shorter length of stay. Although not a driver for TAVR, center SAVR volume was inversely associated with payments. These data will be increasingly important to address value-based reimbursement in valve replacement surgery. (C) 2018 by The Society of Thoracic Surgeons

Burla MJ, Boura J, **Qu L**, **Ditkoff JS** and **Berger DA** (2018). "An assessment of repeat computed tomography utilization in the emergency department in the setting of blunt trauma." *Emergency Radiology* 25(5): 499-504.

[Full Text](#)

Department of Emergency Medicine

Department of Biomedical Sciences

Computed tomography (CT) is a standard imaging modality utilized during the evaluation of trauma patients in the emergency department (ED). However, while it is common to utilize intravenous (IV) contrast as an

adjunct, the use of multiple CT scans and how it impacts patient flow can lead to changes in patient management. Our objectives are to assess length of stay (LOS) and rates of acute kidney injury (AKI), when two CT scans of the abdomen/pelvis are performed compared to one CT scan.

Cami E, Tagami T, **Raff G**, Fonte TA, Renard B, **Gallagher MJ**, **Chinnaiyan K**, **Bilolikar A**, **Fan A**, Hafeez A and **Safian RD** (2018). "Assessment of lesion-specific ischemia using fractional flow reserve (FFR) profiles derived from coronary computed tomography angiography (FFRCT) and invasive pressure measurements (FFRINV): Importance of the site of measurement and implications for patient referral for invasive coronary angiography and percutaneous coronary intervention." Journal of Cardiovascular Computed Tomography 12(6): 480-492.

[Full Text](#)

Department of Internal Medicine

OUIB Medical Student Author

Background: Fractional flow reserve (FFR)-derived from computed tomography angiography (CTA; FFRCT) and invasive FFR (FFRINV) are used to assess the need for invasive coronary angiography (ICA) and percutaneous coronary intervention (PCI). The optimal location for measuring FFR and the impact of measurement location have not been well defined. Methods: 930 patients (age 60.7 + 10 years, 59% male) were included in this study. Normal and diseased coronary arteries were classified into stenosis grades 0-4 in the left anterior descending artery (LAD, n = 518), left circumflex (LCX, n = 112) and right coronary artery (RCA, n = 585). FFRCT (n = 1215 arteries) and FFRINV (n = 26 LAD) profiles were developed by plotting FFR values (y-axis) versus site of measurement (x-axis: ostium, proximal, mid, distal segments). The best location to measure FFR was defined relative to the distal end of the stenosis. FFR \leq 0.8 was considered positive for ischemia. Results: In normal and stenotic coronary arteries there are significant declines in FFRCT and FFRINV from the ostium to the distal vessel (p < 0.001), due to lesion-specific ischemia and to effects unrelated to the lesion. A reliable location (distal to the stenosis) is 10.5 mm [IQR 7.3-14.8 mm] for FFRCT and within 20-30 mm for FFRINV. Rates of positive FFR (from the distal vessel) reclassified to negative FFR (distal to the stenosis) are 61% (FFRCT) and 33% (FFRINV). Conclusion: FFRCT and FFRINV values are influenced by stenosis severity and the site of measurement. FFR measurements from the distal vessel may over-estimate lesion-specific ischemia and result in unnecessary referrals for ICA and PCI.

Cappell MS, Stavropoulos SN and Friedel D (2018). "Systematic review of safety and efficacy of therapeutic endoscopic-retrograde-cholangiopancreatography during pregnancy including studies of radiation-free therapeutic endoscopic-retrograde-cholangiopancreatography." World Journal of Gastrointestinal Endoscopy 10(10): 308-321.

[Full Text](#)

Department of Internal Medicine

Aim: To systematically review safety/efficacy of therapeutic endoscopic-retrograde-cholangiopancreatography (ERCP) performed during pregnancy, considering fetal viability, fetal teratogenicity, premature delivery, and future postpartum development of the infant. Methods: Systematic computerized literature search performed using PubMed with the key words "ERCP" and "pregnancy". Two clinicians independently reviewed the literature, and decided on which articles to incorporate in this review based on consensus and preassigned priorities. Large clinical trials, meta-analyses, systematic reviews, and controlled trials were assigned higher priority than review articles or small clinical series, and individual case reports were assigned lowest priority. Dr. Cappell has formal training and considerable experience in conducting systematic reviews, with 4 published systematic reviews in peer-reviewed journals indexed in PubMed during the last 2 years, and with a PhD in neurophysiology that involved 5 years of training and research in biomedical statistics. Results: Advances in imaging modalities, including abdominal ultrasound, MRCP, and endoscopic ultrasound, have generally obviated the need for diagnostic ERCP in non-pregnant and pregnant patients. Clinical experience with performing ERCP during pregnancy is burgeoning, with > 500 cases of therapeutic ERCP reported in the literature, aside from a national registry study of 58 patients. These studies show that therapeutic ERCP has a very high rate of technical success in clearing the bile duct of gallstones, and has a relatively low and acceptable rate of maternal and fetal complications. The great majority of births after therapeutic ERCP are full-term, have normal birth weights, and are healthy. A recent trend is performing ERCP without radiation to eliminate radiation teratogenicity. Systematic literature review reveals 147 cases of ERCP without fluoroscopy in 8 clinical series. These studies demonstrate extremely high technical success in endoscopically removing

choledocholithiasis, favorable maternal outcomes with rare maternal ERCP complications, and excellent fetal outcomes. ERCP without fluoroscopy generally confirms proper biliary cannulation by aspiration of yellow bile per sphincterotome or leakage of yellow bile around an inserted guide-wire. Conclusion: This systematic literature review reveals ERCP is relatively safe and efficacious during pregnancy, with relatively favorable maternal and fetal outcomes after ERCP. Recommendations are provided about ERCP indications, special ERCP techniques during pregnancy, and prospects for future research.

Centor RM and **Topf JM** (2018). "Web exclusive. Annals on call - diuretic resistance." Annals of Internal Medicine 169(8): OC1-OC1.

[Full Text](#)

Department of Internal Medicine

The article presents the audio on the diuretic resistance in heart failure patients.

Chancellor MB (2018). "The International CURE-UAB Initiative (International Congress of Urologic Research and Education on UnderActive Bladder)." International Journal of Urology 25: 160-160.

Department of Urology

Chancellor MB, Bartolone SN, DeVries EM, **Diokno AC**, Gibbons M, Jankowski R, **Lamb LE**, Pruchnic R, Thor K and Dmochowski R (2018). "New technology assessment and current and upcoming therapies for underactive bladder." Neurourology and Urodynamics 37(8): 2932-2937.

[Full Text](#)

Department of Urology

Background and Aims: Stakeholders from around the world came together to address the unmet needs of underactive bladder (UAB) at the 3rd International Congress for Underactive Bladder. Methods: The main recommendation from the regulatory working group is a need for a meeting of UAB stakeholders and regulatory agencies including the FDA to discuss guidance for regulatory trial design for devices, drugs, and/or biologics for UAB. Results: The following issues to be discussed and agreed upon for UAB trials: 1) Appropriate inclusion and exclusion criteria. 2) Should residual urine volume be the primary outcome parameter and how often should it be measured? 3) Are there secondary measures that should have a place in UAB trials, such as change in the number of catheterizations, quality of life measures, etc.? 4) Use and format of bladder voiding and catheterization diary for trials. 5) Define role and technique of urodynamics in UAB trials. Are urodynamics required to monitor, and possibly exclude, individuals with high pressure voiding induced by bladder prokinetic therapies? 6) Development and use of UAB questionnaires. Discussion and Conclusion: The UAB regulatory working group recognizes the path forward should include engaging the FDA and other regulatory organizations that may harmonize and formalize guidance for regulatory trial designs for therapeutics for UAB.

Chang AJ, McBride S, Keyes M, Chung HT, Davis BJ, Cox BW, Crook J, Demanes DJ, Hsu IC, Kamrava M, **Krauss DJ**, Morton G, III PFO, III MR, Venkat PS, Vigneault E and Zelefsky MJ (2018). "The American Brachytherapy Society and the American Radium Society Appropriate Use Criteria Genitourinary Committee endorse the American Society of Clinical Oncology/Cancer Care Ontario Guidelines." Journal of Clinical Oncology 36(33): 3342-3344.

[Full Text](#)

Department of Radiation Oncology

Chen B, Choi H, Hirsch LJ, Legge A, Buchsbaum R and Detyniecki K (2018). "Cross-sensitivity of psychiatric and behavioral side effects with antiepileptic drug use." Seizure 62: 38-42.

[Full Text](#)

OUWB Medical Student Author

Purpose: To determine rates of cross-sensitivity of intolerable psychiatric and behavioral side effects (IPBSEs) among commonly used antiepileptic drugs (AEDs) in adult patients with epilepsy. Methods: IPBSE was defined as a psychiatric or behavioral side effect attributed to AED use that led to a decrease in dose or cessation of an AED. Cross-sensitivity was calculated and was defined as the likelihood of developing IPBSE to a specific AED given IPBSE to another AED. Our sample consisted of 2312 adult patients that were prescribed 2 or more AEDs. Non-AED confounders and were controlled for in all analyses. Results: Among

the 2312 patients, 20.2% of patients who had taken at least 2 AEDs had IPBSE(s) attributed to at least one AED; 3.5% had IPBSE to two or more AEDs. History of treated depression and psychosis were found to be significant predictors ($p < 0.001$) of developing IPBSE and were controlled for in all AED-specific analyses. Cross-sensitivity was seen between LEV and ZNS ($p < 0.001$). There was a significant increase in odds of experiencing IPBSE to LEV (41.5%; OR = 2.7; $p < 0.001$) or ZNS (22.1%; OR = 3.5; $p < 0.001$) given a patient had IPBSE to another AED compared to having no IPBSE to other AEDs (20.5% and 7.5%, respectively). Conclusion: History of depression and psychosis increased risk of developing IPBSE to AEDs. The probability of experiencing IPBSE increased for a patient taking LEV or ZNS if the patient experienced IPBSE to another AED. Our results may be clinically useful for predicting IPBSE associated with certain AEDs.

Chen C-J, Ding D, Kano H, Mathieu D, Kondziolka D, Feliciano C, Rodriguez-Mercado R, Sheehan DE, **Grills IS**, Barnett G, Lunsford LD and Sheehan JP (2018). "Effect of advanced age on stereotactic radiosurgery outcomes for brain arteriovenous malformations: A multicenter matched cohort study." *World Neurosurgery* 119: e429-e440.

[Full Text](#)

Department of Radiation Oncology

Background: The effect of age on adult brain arteriovenous malformation (AVM) outcomes after stereotactic radiosurgery (SRS) remains unclear. The aim of this study is to compare AVM outcomes between elderly (age ≥ 60 years) and nonelderly adult patients. Methods: We retrospectively reviewed pooled data comprising patients who underwent SRS for AVMs between 1987 and 2014 at 8 centers participating in the International Gamma Knife Research Foundation. Adult (age ≥ 18 years) patients with ≥ 12 months follow-up were dichotomized into elderly and nonelderly cohorts, and matched in a 1:1 ratio. Favorable outcome was AVM obliteration without permanent symptomatic radiation-induced changes (RIC) or post-SRS hemorrhage. Results: The study cohort consisted of 1845 patients (188 elderly vs. 1657 nonelderly) who met the inclusion criteria, and subsequent matching resulted in 181 patients in each cohort. In the matched cohorts, rates of obliteration (54.7% vs. 64.6%; $P = 0.054$) favorable outcome (51.4% vs. 61.3%; $P = 0.056$) were no different between the elderly and nonelderly cohorts. The rates of post-SRS hemorrhage (9.9% vs. 5.5%; $P = 0.115$), RIC (26.5% vs. 30.9%; $P = 0.353$), symptomatic RIC (9.4% vs. 9.4%; $P = 1.000$), and permanent symptomatic RIC (3.3% vs. 2.2%; $P = 0.750$) were also not significantly different between the elderly and nonelderly cohorts. Elderly patients with AVM did have a significantly higher rate of all-cause mortality (27.7% vs. 5.5%; $P < 0.001$). Conclusions: Advanced age does not seem to significantly affect obliteration or complication rates after SRS for AVMs. Although the decision to recommend intervention for AVMs in the elderly population is multifactorial, SRS may be a viable modality when treatment is deemed appropriate.

Chen JY, **Cortes C** and Ferreira VP (2018). "Properdin: A multifaceted molecule involved in inflammation and diseases." *Molecular Immunology* 102: 58-72.

[Full Text](#)

Department of Foundational Medical Studies

Properdin, the widely known positive regulator of the alternative pathway (AP), has undergone significant investigation over the last decade to define its function in inflammation and disease, including its role in arthritis, asthma, and kidney and cardiovascular diseases. Properdin is a glycoprotein found in plasma that is mainly produced by leukocytes and can positively regulate AP activity by stabilizing C3 and C5 convertases and initiating the AP. Promotion of complement activity by properdin results in changes in the cellular microenvironment that contribute to innate and adaptive immune responses, including pro-inflammatory cytokine production, immune cell infiltration, antigen presenting cell maturation, and tissue damage. The use of properdin-deficient mouse models and neutralizing antibodies has contributed to the understanding of the mechanisms by which properdin contributes to promoting or preventing disease pathology. This review mainly focusses on the multifaceted roles of properdin in inflammation and diseases, and how understanding these roles is contributing to the development of new disease therapies.

Chen S, **Qin A**, Zhou D and Yan D (2018). "Technical Note: U-net-generated synthetic CT images for magnetic resonance imaging-only prostate intensity-modulated radiation therapy treatment planning." *Medical Physics* 45(12): 5659-5665.

[Full Text](#)

Department of Radiation Oncology

Purpose: Clinical implementation of magnetic resonance imaging (MRI)-only radiotherapy requires a method to derive synthetic CT image (S-CT) for dose calculation. This study investigated the feasibility of building a deep convolutional neural network for MRI-based S-CT generation and evaluated the dosimetric accuracy on prostate IMRT planning. Methods: A paired CT and T2-weighted MR images were acquired from each of 51 prostate cancer patients. Fifteen pairs were randomly chosen as tested set and the remaining 36 pairs as training set. The training subjects were augmented by applying artificial deformations and feed to a two-dimensional U-net which contains 23 convolutional layers and 25.29 million trainable parameters. The U-net represents a nonlinear function with input an MR slice and output the corresponding S-CT slice. The mean absolute error (MAE) of Hounsfield unit (HU) between the true CT and S-CT images was used to evaluate the HU estimation accuracy. IMRT plans with dose 79.2 Gy prescribed to the PTV were applied using the true CT images. The true CT images then were replaced by the S-CT images and the dose matrices were recalculated on the same plan and compared to the one obtained from the true CT using gamma index analysis and absolute point dose discrepancy. Results: The U-net was trained from scratch in 58.67 h using a GP100-GPU. The computation time for generating a new S-CT volume image was 3.8477.65 s. Within body, the (mean \pm SD) of MAE was (29.96 \pm 4.87) HU. The 1%/1 mm and 2%/2 mm gamma pass rates were over 98.03% and 99.36% respectively. The DVH parameters discrepancy was less than 0.87% and the maximum point dose discrepancy within PTV was less than 1.01% respect to the prescription. Conclusion: The U-net can generate S-CT images from conventional MR image within seconds with high dosimetric accuracy for prostate IMRT plan.

Cheung AY, Price JM and **Hart JC** (2018). "Late-onset uveitis-glaucoma-hyphema syndrome caused by Soemmering ring cataract." *Canadian Journal of Ophthalmology*. ePub Ahead of Print.

[Full Text](#)

Department of Ophthalmology

Objective: To propose a late-onset mechanism for uveitis-glaucoma-hyphema (UGH) syndrome caused by Soemmering ring cataract (SRC) and describe surgical outcomes. Design Retrospective interventional case series. Participants Patients developing UGH from anterior displacement of a haptic from a SRC. Methods: A retrospective chart review was conducted of all patients referred to an anterior segment surgeon (J.C.H.) for intraocular lens (IOL) reposition/exchange between January 2003 and June 2017. Inclusion criteria consisted of all eyes with (i) a diagnosis of UGH syndrome, and (ii) SRC causing anterior displacement of a sulcus-fixated haptic with iris-haptic touch. Outcome measures were change in best corrected visual acuities (BCVA) and resolution of UGH findings. Results: Seven eyes of 7 patients developed UGH secondary to a SRC causing contact between the IOL optic/haptic and the iris/uvea. Diagnosis of UGH was made at a mean 9.1 years after IOL implantation; this was statistically different compared with UGH eyes with other mechanisms from our full UGH cohort (mean 5.4 years; $p = 0.0367$). The mean preoperative LogMAR BCVA of 0.45 improved to 0.37 after surgical intervention ($p = 0.27$). Resolution (or nearly full resolution) of UGH findings was achieved in all cases after SRC extraction and lens repositioning/exchange. Conclusions: Late-onset UGH syndrome can be caused by SRC. Surgical removal of the SRC with IOL repositioning within the capsular bag resolves most if not all components of UGH. Anterior segment ultrasound biomicroscopy is a helpful modality for determining if a SRC is present by demonstrating anatomic relationships commonly obscured by a miotic pupil.

Cheung AY, Price JM, **Heidemann DG** and **Hart JC** (2018). "Uveitis-glaucoma-hyphema syndrome caused by dislocated Cionni endocapsular tension ring." *Canadian Journal of Ophthalmology* 53(5): e213-e214.

[Full Text](#)

Department of Ophthalmology

Cho YK, Nam CW, Koo BK, Schulman-Marcus J, Hartaigh BÓ, Gransar H, Lu Y, Achenbach S, Al-Mallah M, Andreini D, Bax JJ, Budoff MJ, Cademartiri F, Callister TQ, Chang HJ, **Chinnaiyan K**, Chow BJW, Cury RC, Delago A, Feuchtner G, Hadamitzky M, Hausleiter J, Kaufmann PA, Kim YJ, Leipsic J, Maffei E, Marques H, Pontone G, **Raff GL**, Rubinshtein R, Shaw LJ, Villines TC, Berman DS, Jones EC, Peña JM, Lin FY and Min JK (2018). "Usefulness of baseline statin therapy in nonobstructive coronary artery disease by coronary computed tomographic angiography: From the CONFIRM (COronary CT Angiography EvaluatioN for Clinical Outcomes: An InteRnational Multicenter) study." *PLoS ONE* 13(12): e0207194

[Full Text](#)

Department of Internal Medicine

Background: The extent to which the presence and extent of subclinical atherosclerosis by coronary computed tomography angiography influences a potential mortality benefit of statin is unknown. We evaluated the relationship between statin therapy, mortality, and subclinical atherosclerosis. Methods: In the CONFIRM study, patients with normal or non-obstructive plaque (<50% diameter stenosis) for whom data on baseline statin use was available were included. Coronary artery calcium (CAC) was quantified using the Agatston score. The extent of non-obstructive coronary atherosclerosis was quantified using the segment involvement score (SIS). 8,016 patients were followed for a median of 2.5 years with analysis of all-cause mortality and major adverse cardiac events (MACE) including all-cause mortality, myocardial infarction, unstable angina, target vessel revascularization, and coronary artery disease-related hospitalization. Results: 1.2% of patients experienced all-cause mortality. Patients not on baseline statin therapy had a stepwise increased risk of all-cause mortality by CAC (relative to CAC = 0; CAC 1-99: Hazard ratio [HR] 1.65, CAC 100-299: HR 2.19, and CAC ≥300: HR 2.98) or SIS (relative to SIS = 0; SIS 1: HR 1.62, SIS 2-3: 2.48 and SIS ≥4: 2.95). Conversely, in patients on baseline statin therapy, there was no significant increase in mortality risk with increasing CAC (p value for interaction = 0.049) or SIS (p value for interaction = 0.007). The incidence of MACE was 2.1%. Similar to the all-cause mortality, the risk of MACE was increased with CAC or SIS strata in patient not on baseline statin therapy. However, this relation was not observed in patient on baseline statin therapy. Conclusion: In individuals with non-obstructive coronary artery disease, increased risk of adverse events occurs with increasing CAC or SIS who are not on baseline statin therapy. Statin therapy is associated with a mitigation of risk of cardiac events in the presence of increasing atherosclerosis, with no particular threshold of disease burden.

Cousineau C, Kumar T, Roszka JP, Lewinski KL, Li W, **Kanaan HD, Pullalarevu R, Bedi DS, Cohn SR, Samarapungavan D and Zhang PL** (2018). "There is high sensitive and specific correlation between frozen and permanent sections in renal biopsies." *Transplantation Proceedings* 50(10): 3473-3477.

[Full Text](#)

Department of Pathology

Department of Internal Medicine

Department of Surgery

Introduction: Frozen sections have been used for evaluating tumors and margins during daily practice in pathology with high specificity and sensitivity (>90% for both indices both at national level and in our department). The correlation between frozen section tissue for immunofluorescent (IF) studies and permanent sections for light microscopy, along with electron microscopy, is critical for constructing a final renal pathology diagnosis. Methods: We studied the correlation between the frozen sections for IF studies and separate fragments of tissue for permanent light microscopic sections in our renal transplant biopsies for purposes of quality control. Frozen sections for IF sections were compared with permanent sections for light microscopy in 122 renal transplant biopsies, using inflammation as the key criterion (63 with no inflammation and 59 with inflammation) to determine the correlation. Results: There was high sensitivity (94.9%) and specificity (92.1%) for the correlation between the frozen section and permanent sections. Conclusions: Our data suggest that parts of renal transplant biopsy tissue dissected to freeze for IF studies and for light microscopy were highly correlated to ensure a high quality of renal tissue dissection for the final diagnosis in renal transplant biopsies.

Dabrowski E, Chambers HG, Heinen F, Kaňovský P, Schroeder S, Dersch H, Geister TL, Lehn A, Martinez-Torres FJ, Pulte I and Gaebler-Spira D (2018). "Efficacy and safety of incobotulinumtoxinA for upper-limb or combined upper- and lower-limb spasticity in children and adolescents with cerebral palsy: XARA study design." *Toxicon* 156: S19.

[Full Text](#)

Department of Physical Medicine & Rehabilitation

Introduction: This ongoing, prospective, multicenter, randomized, double-blind, pivotal Phase 3 study (XARA; NCT02002884) will assess efficacy and safety of [incobotulinumtoxinA](#) (BoNT-A free of complexing proteins) in upper-limb (UL) or combined UL/lower-limb (LL; UL/LL) [spasticity](#) in children and adolescents with [cerebral palsy](#) (CP). Methods: XARA enrolls ambulant or nonambulant, pretreated or treatment-naive subjects (ages 2 to 17 years) with Ashworth Scale (AS) score ≥2 in the clinical target patterns (CTP) flexed elbow and/or wrist,

and a clinical need for treatment, at sites in the USA, Latin America, and Europe. In the double-blind, single-cycle main period (MP), subjects (n≥344) are randomized (2:1:1) to standardized **incobotulinumtoxinA** high- (8 U/kg; ≤200 U), mid- (6 U/kg; ≤150 U), or low- (2 U/kg; ≤50 U) dose (Figure). Subjects can receive additional injections, including LL, in 1 of 5 predefined treatment combinations up to a total dose applicable for their Gross **Motor Function** Classification System level (up to 20 U/kg; ≤500 U). Subjects with continued clinical need can enter the open-label extension period of 3 consecutive **high-dose** **incobotulinumtoxinA** injection cycles. Results: The primary endpoints are: change from baseline in AS score in the main UL **CTP** (flexed elbow or wrist) at MP week 4 (mixed model repeated measurement [MMRM]) and Investigator's Global Impression of Change Scale (GICS) score at week 4 of MP (analysis of covariance [ANCOVA]). Secondary endpoints include: change from baseline in AS score for other UL treated CTPs; change from baseline in pain intensity and frequency; and subject and caregiver GICS score at week 4. Safety will be analyzed descriptively. Conclusions: This study aims to provide evidence for the efficacy and safety of **incobotulinumtoxinA** in the multilevel treatment of UL and combined UL/LL **spasticity** in children and adolescents with CP.

Dault EM, Prada AE and **Boyanton BL** (2018). "Performance and workflow comparison of simplex bordetella direct (IUO) with illumigene pertussis." Journal of Molecular Diagnostics 20(6): 938-938.

Department of Pathology

Deraniyagala R (2018). "Is it necessary to test oropharyngeal cancer for both p16 and HPV?" Practical Radiation Oncology 9(2): 61-62.

[Full Text](#)

Department of Radiation Oncology

Dilworth JT, Griffith K, Vicini FA, Hayman JA, Moran JM, Radawski JD, Jagsi R, **Gustafson GS**, Boike TP, Walker EM, Dominello MM and Pierce LJ (2018). "Increasing use of hypofractionated whole breast irradiation: An analysis of practice patterns within a state-wide quality consortium." International Journal of Radiation Oncology Biology Physics 102(3): E583-E584.

[Full Text](#)

Department of Radiation Oncology

Purpose/Objective(s): Randomized clinical trials support the efficacy and safety of hypofractionated whole breast irradiation (H-WBI) in select patients with early stage breast cancer following breast conserving surgery. Existing 2011 ASTRO consensus guidelines suggest appropriateness criteria for the use of H-WBI based on subsets of patients well represented in these trials, including patients ≥50 years of age, pT1-2/pNO disease, patients who did not receive systemic chemotherapy, and radiation treatment plans with dose heterogeneity within ~7%. This longitudinal study reports the use of H-WBI in patients treated in practices collaborating in a state-wide quality consortium. Materials/Methods: We identified women in the consortium database who received whole breast irradiation between the years 2012 (11 participating institutions, 638 cases) and 2017 (22 institutions, 1295 cases). We determined the proportion of H-WBI cases (as a percentage ±95% CI) over time within various patient subgroups that satisfied all or some guideline criteria. We used separation (SEP) >25 cm along the central axis as a surrogate for dose heterogeneity. Results: The most common H-WBI regimens utilized were 42.56 Gy/16 fractions (80% of cases) and 40 Gy/15 fractions (10% of cases). A boost of 10-10.64 Gy/4 fractions (51%), 10 Gy/5 fractions (31%), or 12 Gy/6 fractions (8%) was delivered to the surgical cavity in 88% (2012) and 81% (2017) of all cases. In the consortium as a whole, the use of H-WBI increased from 22%±3% to 61%±3% from 2012 to 2017. Among patients who met all consensus criteria, H-WBI use increased from 86%±14% to 99%±2% for patients who did not receive a boost and from 22%±7% to 85%±5% for those who received a boost. Similar increases in H-WBI use were observed independent of histology (IDC vs. ILC), receptor status (ER positive vs. ER negative vs. TNBC), or laterality (right vs. left). The use of H-WBI increased from 28%±10% to 76%±6% in patients with pure DCIS (otherwise guideline endorsed), from 33%±12% to 61%±9% in patients with a SEP >25 cm (otherwise guideline endorsed), and from 6%±11% to 40%±21% in patients who received systemic chemotherapy (otherwise guideline endorsed). However, the increase in H-WBI use was more modest for patients younger than 50 years but otherwise guideline endorsed (20%±35% to 38%±34%). Conclusion: In

this large, multi-center cohort, the use of H-WBI has increased over the last 5 years in all patient subsets, albeit with less frequency in those who did not meet all guideline criteria, particularly in patients who received chemotherapy and those <50 years of age. As updated guidelines for H-WBI are imminent, further examination of uptake in the use of H-WBI as well as the clinical outcomes and toxicities in these subgroups is warranted.

Ding X, Li X, Zhou J, Stevens CW, Yan D, Chinnaiyan P and Kabolizadeh P (2018). "Explore the potential clinical and dosimetric improvements for brain cancer proton beam treatment based on the new delivery and planning technique developments - Collimator based intensity modulated proton therapy and spot-scanning proton arc therapy." International Journal of Radiation Oncology Biology Physics 102(3): E490-E490.

[Full Text](#)

OUWB Medical Student Author

Department of Radiation Oncology

Diokno AC, Newman DK, Low LK, Griebing TL, Maddens ME, Goode PS, Raghunathan TE, Subak LL, Sampsel CM, Boura JA, Robinson AE, McIntyre D and Burgio KL (2018). "Effect of group-administered behavioral treatment on urinary incontinence in older women: A randomized clinical trial." JAMA Internal Medicine 178(10): 1333-1341.

[Full Text](#)

Department of Urology

Department of Internal Medicine

Importance: Urinary incontinence (UI) guidelines recommend behavioral interventions as first-line treatment using individualized approaches. A one-time, group-administered behavioral treatment (GBT) could enhance access to behavioral treatment. Objective: To compare the effectiveness, cost, and cost-effectiveness of GBT with no treatment for UI in older women. Design, Setting, and Participants: Multisite randomized clinical trial (the Group Learning Achieves Decreased Incidents of Lower Urinary Symptoms [GLADIOLUS] study), conducted from July 7, 2014, to December 31, 2016. The setting was outpatient practices at 3 academic medical centers. Community-dwelling women 55 years or older with UI were recruited by mail and screened for eligibility, including a score of 3 or higher on the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF), symptoms of at least 3 months' duration, and absence of medical conditions or treatments that could affect continence status. Of 2171 mail respondents, 1125 were invited for clinical screening; 463 were eligible and randomized; 398 completed the 12-month study. Interventions: The GBT group received a one-time 2-hour bladder health class, supported by written materials and an audio CD. Main Outcomes and Measures: Outcomes were measured at in-person visits (at 3 and 12 months) and by mail or telephone (at 6 and 9 months). The primary outcome was the change in the ICIQ-SF score. Secondary outcome measures assessed UI severity, quality of life, perceptions of improvement, pelvic floor muscle strength, and costs. Evaluators were masked to group assignment. RESULTS Participants (232 in the GBT group and 231 in the control group) were aged 55 to 91 years (mean [SD] age, 64 [7] years), and 46.2%(214 of 463) were African American. In intent-to-treat analyses, the ICIQ-SF scores for GBT were consistently lower than control across all time points but did not achieve the projected 3-point difference. At 3 months, the difference in differences was 0.96 points (95% CI, -1.51 to -0.41 points), which was statistically significant but clinically modest. The mean (SE) treatment effects at 6, 9, and 12 months were 1.36 (0.32), 2.13 (0.33), and 1.77 (0.31), respectively. Significant group differences were found at all time points in favor of GBT on all secondary outcomes except pelvic floor muscle strength. The incremental cost to achieve a treatment success was \$723 at 3 months; GBT dominated at 12 months. Conclusions and Relevance: The GLADIOLUS study shows that a novel one-time GBT program is modestly effective and cost-effective for reducing UI frequency, severity, and bother and improving quality of life. Group-administered behavioral treatment is a promising first-line approach to enhancing access to noninvasive behavioral treatment for older women with UI.

Eaton K and Ferrari T (2018). "Serving up self-forgiveness: Respiratory and frontalis EMG patterns." Psychophysiology 55: S119-S119.

Department of Foundational Medical Studies

OUWB Medical Student Author

Edhi AI, **Cappell MS**, Sharma N, **Amin M** and Patel A (2018). "One oral dose of sodium polystyrene sulfonate associated with ischemic colitis and crystal deposition in colonic mucosa." ACG Case Reports Journal 5: e74-e74.

[Full Text](#)

Department of Internal Medicine

Department of Pathology

Eijsvogels TMH, Thompson PD and **Franklin BA** (2018). "The "Extreme Exercise Hypothesis": Recent findings and cardiovascular health implications." Current Treatment Options in Cardiovascular Medicine 20(10): 84.

[Full Text](#)

Department of Internal Medicine

The "Extreme Exercise Hypothesis" is characterized by a U-shaped or reverse J-shaped, dose-response curve between physical activity volumes and cardiovascular health outcomes. In this review, we summarize recent findings that may support or refute the "Extreme Exercise Hypothesis." Furthermore, we discuss potential cardiovascular health implications of the cardiac anatomical, structural, contractility, and biomarker abnormalities that have been reported in some veteran endurance athletes.

Eisenbrey D, Fales W, Dunne R and **Swor R** (2018). "Emergency medical system response to in home delivery and midwife utilization in the state of Michigan." Annals of Emergency Medicine 72(4): S111-S111.

OUWB Medical Student Author

Department of Emergency Medicine

Eisho S, Salem NM, Hoffman JL, Koerber JM and **Smythe MA** (2018). "Major bleeding with apixaban in atrial fibrillation: patient characteristics, management, and outcomes." Hospital Practice 46(4): 165-169.

[Full Text](#)

Department of Biomedical Sciences

Objectives: To identify patient characteristics, bleed management, and bleed outcomes in patients experiencing an apixaban major bleeding event and to identify opportunities to improve the safe use of apixaban. Methods: This retrospective single health-system study identified apixaban patients experiencing a major bleeding event between January 2013 and May 2016 through electronic medical record review. Patient characteristics, bleed management, and outcomes were extracted in those with a confirmed major bleed assessed by the International Society on Thrombosis and Haemostasis criteria. Results: Fifty major bleeding events occurred in 49 patients (79 ± 9.8 years). Patient characteristics included history of hypertension (94%), anemia (68%), and concomitant antiplatelet use (68%). Gastrointestinal bleeding occurred in 72% of patients and intracranial hemorrhage in 14% of patients. Packed red blood cells (PRBCs) were utilized in 82% of patients and reversal agents were administered to 6% of patients. Mortality during the hospital admission for the bleed was 0%. Anticoagulation was held at discharge in 64% of patients and remained held at 30 days in the majority of patients. Of those on concurrent aspirin therapy, an appropriate indication was not found in 64.7% of patients. Conclusions: Patients with major bleeding were elderly and frequently on inappropriate concomitant antiplatelet therapy. The majority of patients were managed with PRBC transfusion. More than half of patients had anticoagulation therapy held at discharge. Concerns with prescribing and patient management were identified leading to recommendations for improving the safe use of apixaban therapy.

Epling JW, Heidelbaugh JJ, Woolever D, Castelli G, **Mi M**, Mader EM and Morley CP (2018). "Examining an evidence-based medicine culture in residency education." Family Medicine 50(10): 751-755.

[Full Text](#)

Department of Foundational Medical Studies

Background and Objectives: Reports of innovations in evidence-based medicine (EBM) training have focused on curriculum design and knowledge gained. Little is known about the educational culture and environment for EBM training and the extent to which those environments exist in family medicine residencies in the United States. Methods: A literature review on this topic identified a validated EBM environment scale intended for learner use. This scale was adapted for completion by family medicine residency program directors (PDs) and administered through an omnibus survey. Responses to this scale were analyzed descriptively with program and PD demographics. An EBM culture score was calculated for each program

and the results were regressed with the correlated demographics. Results: In our adapted survey, family medicine PDs generally rated their residencies high on the EBM culture scale, but admitted to challenges with faculty feedback to residents about EBM skills, ability to protect time for EBM instruction, and clinician skepticism about EBM. In linear regression analysis, the mean summary score on the EBM scale was lower for female PDs and in programs with a higher proportion of international medical school graduates. Conclusions: To improve the culture for EBM teaching, family medicine residency programs should focus on faculty engagement and support and the allocation of sufficient time for EBM education.

Ezekwudo DE, Anusim N, Konde AS, Gbadamosi B, Khoury J, Macari D, **Zakalik D**, Blankenship L, **Gaikazian S** and **Jaiyesimi I** (2018). "Outcome of lymphocyte predominant Hodgkin Lymphoma: A single institutional analysis." Blood 132: 2.

Department of Internal Medicine

Ezekwudo DE, **Gaikazian S**, Anusim N, Konde AS, **Zakalik D**, **Huben MT**, **Stender M**, **Anderson J** and **Jaiyesimi I** (2018). "Clinical outcome following reinstatement of anticoagulation after major gastrointestinal bleed: A single institutional analysis." Blood 132: 4.

[Full Text](#)

Department of Internal Medicine

Ezekwudo DE, Singh R, Gbadamosi B, **Micale M**, **Jaiyesimi I** and **Smith M** (2018). "Prognostic impact of bone marrow erythropoiesis on newly diagnosed plasma cell myeloma: A single institutional analyses." Blood 132: 2.

Department of Pathology

Department of Internal Medicine

Fairbairn TA, Nieman K, Akasaka T, Nørgaard BL, Berman DS, **Raff G**, Hurwitz-Koweek LM, Pontone G, Kawasaki T, Sand NP, Jensen JM, Amano T, Poon M, Øvrehus K, Sonck J, Rabbat M, Mullen S, De Bruyne B, Rogers C, Matsuo H, Bax JJ, Leipsic J and Patel MR (2018). "Real-world clinical utility and impact on clinical decision-making of coronary computed tomography angiography-derived fractional flow reserve: lessons from the ADVANCE Registry." European Heart Journal 39(41): 3701-3711.

[Full Text](#)

Department of Internal Medicine

Aims: Non-invasive assessment of stable chest pain patients is a critical determinant of resource utilization and clinical outcomes. Increasingly coronary computed tomography angiography (CCTA) with selective CCTA-derived fractional flow reserve (FFRCT) is being used. The ADVANCE Registry, is a large prospective examination of using a CCTA and FFRCT diagnostic pathway in real-world settings, with the aim of determining the impact of this pathway on decision-making, downstream invasive coronary angiography (ICA), revascularization, and major adverse cardiovascular events (MACE). Methods and Results: A total of 5083 patients with symptoms concerning for coronary artery disease (CAD) and atherosclerosis on CCTA were enrolled at 38 international sites from 15 July 2015 to 20 October 2017. Demographics, symptom status, CCTA and FFRCT findings, treatment plans, and 90 days outcomes were recorded. The primary endpoint of reclassification between core lab CCTA alone and CCTA plus FFRCT-based management plans occurred in 66.9% [confidence interval (CI): 64.8-67.6] of patients. Non-obstructive coronary disease was significantly lower in ICA patients with FFRCT ≤ 0.80 (14.4%) compared to patients with FFRCT > 0.80 (43.8%, odds ratio 0.19, CI: 0.15-0.25, $P < 0.001$). In total, 72.3% of subjects undergoing ICA with FFRCT ≤ 0.80 were revascularized. No death/myocardial infarction (MI) occurred within 90 days in patients with FFRCT > 0.80 ($n = 1529$), whereas 19 (0.6%) MACE [hazard ratio (HR) 19.75, CI: 1.19-326, $P = 0.0008$] and 14 (0.3%) death/MI (HR 14.68, CI 0.88-246, $P = 0.039$) occurred in subjects with an FFRCT ≤ 0.80 . Conclusions: In a large international multicentre population, FFRCT modified treatment recommendation in two-thirds of subjects as compared to CCTA alone, was associated with less negative ICA, predicted revascularization, and identified subjects at low risk of adverse events through 90 days.

Faught AM, Olsen L, Schubert L, Rusthoven C, Castillo E, Castillo R, Zhang J, **Guerrero T**, Miften M and Vinogradskiy Y (2018). "Functional-guided radiotherapy using knowledge-based planning." Radiotherapy and Oncology 129(3):

494-498.

[Full Text](#)

Department of Radiation Oncology

Background and Purpose: There are two significant challenges when implementing functional-guided radiotherapy using 4DCT-ventilation imaging: (1) lack of knowledge of realistic patient specific dosimetric goals for functional lung and (2) ensuring consistent plan quality across multiple planners. Knowledge-based planning (KBP) is positioned to address both concerns. Material and Methods: A KBP model was created from 30 previously planned functional-guided lung patients. Standard organs at risk (OAR) in lung radiotherapy and a ventilation contour delineating areas of high ventilation were included. Model validation compared dose-metrics to standard OARs and functional dose-metrics from 20 independent cases that were planned with and without KBP. Results: A significant improvement was observed for KBP optimized plans in V20Gy and mean dose to functional lung ($p = 0.005$ and 0.001 , respectively), V20Gy and mean dose to total lung minus GTV ($p = 0.002$ and 0.01 , respectively), and mean doses to esophagus ($p = 0.005$). Conclusion: The current work developed a KBP model for functional-guided radiotherapy. Modest, but statistically significant, improvements were observed in functional lung and total lung doses.

Fay K, Almendares O, **Robinson-Dunn B** and Schrag S (2018). "Antenatal and intrapartum nucleic acid amplification test use for group B Streptococcus screening—United States, 2016." [Diagnostic Microbiology and Infectious Disease](#). ePub Ahead of Print.

[Full Text](#)

Department of Pathology

Perinatal group B Streptococcus (GBS) disease prevention guidelines in 2010 allowed for processing of screening specimens by nucleic acid amplification tests (NAATs); however, the extent of NAAT use is unknown. A 2016 laboratory survey sent to 10 surveillance sites found that 18.7% of responding laboratories offered NAAT for GBS screening (antenatal only: 7.3%; intrapartum only: 4.1%; both: 3.4%).

Feldmann KJ, **Goldstein JA**, Marinescu V, **Dixon SR** and **Raff GL** (2018). "Disparate impact of ischemic injury on regional wall dysfunction in acute anterior vs inferior myocardial infarction." [Cardiovascular Revascularization Medicine](#). ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine

Background: Acute transmural ischemia should induce similar magnitude of wall motion abnormality (WMA) in both anterior myocardial infarction (AMI) and inferior (IMI). However, patients with AMI generally suffer more severe hemodynamic compromise. Methods: This retrospective study compared WMA's in ST segment elevation MI patients undergoing primary reperfusion and subsequent cardiac MRI. Regional systolic wall motion and thickening were assessed in all segments throughout the left ventricle (LV). Results: We analyzed 37 patients (AMI = 24 vs IMI = 13). Reperfusion success was achieved in all and there were no differences between groups in door-to-balloon time (AMI median 77 vs IMI 119 min, $p = 0.085$). Compared to IMI, in AMI LV ejection fraction was more depressed ($37 \pm 7.6\%$ vs $51 \pm 10.3\%$, $P = 0.0006$) and regional WMA more severe (total regional WMA score = 2.63 ± 0.53 vs 2.1 ± 0.52 , $P = 0.007$). Regional dyskinesia was commonly observed in AMI patients but was rare in IMI (79% vs 7% of cases). Similarly, AMI manifested systolic thinning, whereas thickening was depressed but still present in IMI patients. Strikingly, WMA severity differed downstream relative to the origin of the infarct artery: In all AMI cases, WMA worsened from proximal anterior toward the distal apical zone; in IMI the pattern was reverse, with WMA consistently most severe in the basal segment of the inferior-posterior wall with preservation toward the apical distribution of the infarct vessel. Conclusion: These results demonstrate a disparate impact of ischemic injury on mechanical performance of the anterior vs inferior-posterior walls. These findings may be attributable to differences between the walls in architecture, mechanics and coronary blood flow. These observations may have implications for myocardial salvage, remodeling and prognosis.

Ferreira V, Hague A, **Cortes C**, Alam MN, Sreedhar M and Pangburn M (2018). "Characterization of binding properties of individual functional sites of complement factor H." [Molecular Immunology](#) 102: 148-148.

Department of Foundational Medical Studies

Figuroa Rodriguez F, Minkyung K, Jinna S, Farshad S and **Davila F** (2018). "Rheumatoid meningoencephalitis: A feared condition in the era of TNF blockers." Case Reports in Rheumatology 2018: 4610260-4610260.

[Full Text](#)

Department of Internal Medicine

Central nervous system (CNS) involvement in rheumatoid arthritis (RA) is uncommon, and most of the times, it is secondary to vasculitic processes or extra-articular rheumatoid nodules. Meningeal involvement is extremely rare. In the literature, there are a few case reports, series, and retrospective studies which have demonstrated the association of rheumatoid (aseptic) meningoencephalitis after starting tumor necrosis factor (TNF) inhibitors. We present a case of rheumatoid meningoencephalitis (RME) in a 52-year-old male with a history of RA on adalimumab who presented with headaches associated with motor and sensory deficits, all of which resolved after this diagnosis was achieved and received appropriate therapy with high-dose glucocorticoids. We also present an update with high yield points summarizing clinical features, diagnostic workup, and management of RME. Finally, we post a literature review of relevant CNS rheumatoid disease in patients with and without exposure to TNF inhibitors.

Franklin BA and Chaddha A (2018). "Resting heart rate and blood pressure as indices of cardiovascular and mortality risk: Is lower invariably better?" Journal of Cardiopulmonary Rehabilitation and Prevention 38(6): 353-357.

[Full Text](#)

Department of Internal Medicine

Franklin BA, Kokkinos P and Lavie CJ (2018). "Do not forget physical activity and cardiorespiratory fitness." The American Journal of Cardiology 122(10): 1797-1799.

[Full Text](#)

Department of Internal Medicine

Freudenberger DC, **Baker EA**, Siljander MP and **Rohde RS** (2018). "Factors driving patient perception of quality care after primary total hip and total knee arthroplasty." Journal of the American Academy of Orthopaedic Surgeons. Global Research & Reviews 2(11): e061-e061.

[Full Text](#)

Department of Orthopedic Surgery

Introduction: Differences in female and male patient perception of care and satisfaction following primary total hip arthroplasty (THA) and total knee arthroplasty (TKA) were assessed via Hospital Consumer Assessment of Healthcare Providers and Systems survey, demographic, and clinical data. Methods: After institutional review board approval, a retrospective review of the Hospital Consumer Assessment of Healthcare Providers and Systems survey responses at a private, academic, level-I trauma center was performed from January 2011 to December 2013. Inclusion criteria were primary THA and TKA patients who were 18 years or older and returned the survey. Results: Overall, 1,166 THA and 1,411 TKA were included, with 55.0% of female THA patients and 64.5% of male THA patients highly satisfied ($P = 0.002$). The mean overall hospital rating was 7.2 for female THA and 7.8 for male THA ($P = 0.003$) patients. No significant differences was found in the TKA cohort. For all cohorts, the Nurse Communication with Nurses domain reported the greatest correlation with overall hospital rating (range, $\rho = 0.418$ to $\rho = 0.502$; $P < 0.0001$). Discussion: This series indicated that initiatives to improve patient care and patient perception of care should focus on nurse-patient communication, hospital staff responsiveness, the care transition process, and hospital environment. Patient sex was a significant factor in the overall satisfaction for THA, with female patients reporting significantly lower ratings than male patients.

Fuller TW, Pekala K, Theisen KM, Tapper A, **Burks F** and Rusilko PJ (2018). "Prevalence and surgical management of concurrent adult acquired buried penis and urethral stricture disease." World Journal of Urology. ePub Ahead of Print.

[Full Text](#)

Department of Surgery

To describe the prevalence and surgical management of coexistent adult acquired buried penis (AABP) and urethral stricture disease. AABP patients often have urinary dribbling with resultant chronic local moisture, infection, and inflammation that combine to cause urethral stricture disease. To date, no screening or surgical management algorithms have been described.

Gibson HM, McKnight BN, Malysa A, Dyson G, **Wiesend WN**, McCarthy CE, Reyes J, Wei WZ and Viola-Villegas NT (2018). "IFN gamma PET imaging as a predictive tool for monitoring response to tumor immunotherapy." Cancer Research 78(19): 5706-5717.

[Full Text](#)

Department of Pathology

IFN gamma is an attractive target for imaging active antitumor immunity due to its function in the T-cell signaling axis. Here, we test an IFN gamma immuno-PET (immunoPET) probe for its capacity to identify adaptive immunotherapy response after HER2/neu vaccination in both spontaneous salivary and orthotopic neu thorn mouse mammary tumors. IFN gamma immunoPET detected elevated cytokine levels in situ after vaccination, which inversely correlated with tumor growth rate, an indicator of response to therapy. In a model of induced T-cell anergy where CD8 T cells infiltrate the tumor, but upregulate PD-1, IFN gamma tracer uptake was equivalent to isotype control, illustrating a lack of antitumor T-cell activity. The IFN gamma immunoPET tracer detected IFN gamma protein sequestered on the surface of tumor cells, likely in complex with the IFN gamma receptor, which may explain imaging localization of this soluble factor in vivo. Collectively, we find that the activation status of cytotoxic T cells is annotated by IFN gamma immunoPET, with reduced off-target binding to secondary lymphoid tissues compared with imaging total CD3(+) tumor-infiltrating lymphocytes. Targeting of soluble cytokines such as IFN gamma by PET imaging may provide valuable noninvasive insight into the function of immune cells in situ. Significance: This study presents a novel approach to monitor therapeutic outcomes via IFN gamma-targeted positron emission tomography.

Goldstein JA, Dixon SR, Douglas PS, Ohman EM, Moses J, Popma JJ and O'Neill WW (2018). "Maintenance of valvular integrity with Impella left heart support: Results from the multicenter PROTECT II randomized study." Catheterization and Cardiovascular Interventions 92(4): 813-817.

[Full Text](#)

Department of Internal Medicine

Background: The Impella 2.5 axial flow pump, which is positioned across the aortic valve, is widely employed for hemodynamic support. The present study compared structural and functional integrity of the left heart valves in patients undergoing Impella vs intra-aortic balloon pump in the randomized PROTECT II trial. Methods and Results: Transthoracic echocardiograms were performed at baseline, 1 and 3 months in 445 patients in the PROTECT II trial. Serial studies were analyzed by an independent echocardiography core laboratory for aortic and mitral valve structure and function, and left ventricular ejection fraction (LVEF). During Impella support there was no appreciable change in the degree of baseline valvular regurgitation. There were no cases of structural derangement of the mitral or aortic valve after use of the Impella device. At 90-day follow-up, there was an average 22% relative increase in LVEF from baseline (27% vs. 33% +/- 11, P<0.001). Conclusions: The present echocardiographic analysis of the PROTECT II study confirms prior observations regarding the safety of the Impella 2.5 device with respect to mitral and aortic valve function.

Gordon BS and Dangayach NS (2018). "Response to "Criteria for spiritual support in critical care"." Journal of Critical Care 48: 472.

[Full Text](#)

OUIWB Medical Student Author

Grafe K, Bendick P, Burr M, Boura J and **Franklin BA** (2018). "Effects of resistance training on vascular and hemodynamic responses in patients with coronary artery disease." Research Quarterly for Exercise and Sport 89(4): 457-464.

[Full Text](#)

Department of Internal Medicine

Purpose: The purpose of this study was to determine the impact of adjunctive resistance training (RT) in aerobically trained patients with coronary artery disease on systolic blood pressure (SBP), heart rate (HR), rating of perceived exertion (RPE; using the traditional 6-to-20 scale), and rate-pressure product (RPP) responses to lifting fixed submaximal workloads. Additionally, pretest and posttest RT measures of brachial artery reactivity were obtained. Method: Fifteen patients with coronary artery disease

($M_{age} = 66.1 \pm 5.1$ years) who were already performing regular aerobic exercise completed an adjunctive 12-week progressive RT program. Prior to and immediately after the training period, hemodynamic responses and RPE were obtained while participants performed one set of exercises including the bicep curl (BC), shoulder press (SP), and leg press (LP) at individually determined fixed submaximal loads, using ~ 60% to 80% of estimated maximal voluntary contraction. Vascular function was assessed by flow-mediated vasodilation (FMD) testing before and after training. Results: Attenuated hemodynamic and RPE responses for all variables were observed. Meaningful changes were attained for RPP ($[HR \cdot SBP] / 100$) during BC (106 ± 27 mmHg \cdot beats/min to 91 ± 22 mmHg \cdot beats/min, $d = 0.6$, $p < .05$) and SP (102 ± 24 mmHg \cdot beats/min to 86 ± 17 mmHg \cdot beats/min, $d = 0.8$, $p < .05$). Rating of perceived exertion decreased significantly during all exercises (d ranging from 1.8 to 3.1, $p < .05$): BC (14.3 ± 2.6 to 9.7 ± 1.6), SP (13.9 ± 1.6 to 9.2 ± 1.5), and LP (14.3 ± 1.4 to 10.3 ± 1.6). Peak group FMD responses were 12.8% and 10.3% dilation at pretraining and posttraining, respectively ($p > .05$). Five of the 15 participants showed modest improvements in their posttraining time to achieve maximum dilation from a mean of 117 s to 81 s, although this change was not statistically significant ($p > .05$). Conclusion: Among aerobically trained cardiac patients, a supplemental RT program resulted in decreased hemodynamic and RPE responses to lifting fixed submaximal workloads.

Graham SF, Rey NL, Ugur Z, Yilmaz A, Sherman E, **Maddens M**, **Bahado-Singh RO**, Becker K, Schulz E, Meyerdirk LK, Steiner JA, Ma J and Brundin P (2018). "Metabolomic profiling of bile acids in an experimental model of prodromal Parkinson's Disease." *Metabolites* 8(4): 71.

[Full Text](#)

Department of Internal Medicine

For people with Parkinson's disease (PD), considered the most common neurodegenerative disease behind Alzheimer's disease, accurate diagnosis is dependent on many factors; however, misdiagnosis is extremely common in the prodromal phases of the disease, when treatment is thought to be most effective. Currently, there are no robust biomarkers that aid in the early diagnosis of PD. Following previously reported work by our group, we accurately measured the concentrations of 18 bile acids in the serum of a prodromal mouse model of PD. We identified three bile acids at significantly different concentrations ($p < 0.05$) when mice representing a prodromal PD model were compared with controls. These include ω -muricholic acid (MCAo), tauroursodeoxycholic acid (TUDCA) and ursodeoxycholic acid (UDCA). All were down-regulated in prodromal PD mice with TUDCA and UDCA at significantly lower levels (17-fold and 14-fold decrease, respectively). Using the concentration of three bile acids combined with logistic regression, we can discriminate between prodromal PD mice from control mice with high accuracy (AUC (95% CI) = 0.906 (0.777-1.000)) following cross validation. Our study highlights the need to investigate bile acids as potential biomarkers that predict PD and possibly reflect the progression of manifest PD.

Greenlee H, Lew DL, Hershman DL, Newman VA, Hansen L, Hartman SJ, Korner J, Shi ZX, Molmenti CLS, Sayegh A, Fehrenbacher L, Lo S, Klemp J, Rinn K, **Robertson JM**, Unger J, Gralow J, Albain K, Krouse R and Fabian C (2018). "Phase II feasibility study of a weight loss intervention in female breast and colorectal cancer survivors (SWOG S1008)." *Obesity* 26(10): 1539-1549.

[Full Text](#)

Department of Radiation Oncology

Objective: This study aimed to test the feasibility of a 12-month weight loss intervention using telephone-based counseling plus community-situated physical activity (PA) in female breast cancer (BC) and colorectal cancer (CRC) survivors. Methods: This multisite cooperative group study enrolled sedentary, female, postmenopausal BC and CRC survivors with BMI 25 kg/m²) to receive 12-month fitness center memberships and telephone counseling encouraging 150 min/wk of PA and a 500-kcal/day decrease in energy intake. Feasibility criteria included accrual, adherence, and retention. Target weight loss was 5%. Results: Among 25 BC survivors, median baseline BMI was 37.2 (range: 27.7-54.6), accrual occurred in 10 months, 60% and 28% met diet and exercise goals, 80% provided 12-month measures, and average weight loss was 7.6% (95% CI: -3.9%, 19.2%). Among 23 CRC survivors, median BMI was 31.8 (range: 26.4-48.7), accrual occurred in 24 months, 61% and 17% met diet and exercise goals, 87% provided measures, and average weight loss was 2.5% (95% CI: -8.2%, 13.3%). Conclusions: It is feasible to recruit and retain BC survivors in a cooperative group diet and PA weight loss trial. BC survivors achieved clinically meaningful weight loss but

did not meet a priori adherence goals. In CRC survivors, recruitment was more difficult, and the intervention was less effective.

Gregori NZ, **Hassan TS** and Klufas MA (2018). "Cases that changed the way we practice." Retina Today 2018(October): 54-58.

[Request Form](#)

Department of Ophthalmology

Gruner MF, Vu CC, Marvin K, Ye H, **Nandalur SR** and **Jawad MS** (2018). "Outcomes following salvage radiation therapy for recurrent endometrial cancer in patients with no prior adjuvant therapy -- An institutional review." International Journal of Radiation Oncology*Biophysics 102(3, Supplement): e647.

[Full Text](#)

OUWB Medical Student Author

Department of Radiation Oncology

Gupta P, Ehlert M, **Bartley J**, **Gillera J**, Killinger KA, Boura JA, **Nagaraju P** and **Fischer M** (2018). "Perioperative outcomes, complications, and efficacy of robotic-assisted prolapse repair: A single institution study of 196 patients." Female Pelvic Medicine and Reconstructive Surgery 24(6): 408-411.

[Full Text](#)

Department of Urology

Introduction: Abdominal pelvic organ prolapse repair is efficacious for uterovaginal and apical prolapse. We describe the safety and efficacy of robotic prolapse repair in a large teaching institution. Methods: Consecutive robotic-assisted prolapse repairs at a single institution between 2006 and 2014 were retrospectively reviewed for patient characteristics, operative information, and outcomes. Results: A total of 196 women (mean age, 61 ± 9 years) underwent robotic prolapse repair (189 sacrocolpopexy, 6 sacrohysteropexy, 1 enterocele repair). Concomitant procedures included hysterectomy (88), midurethral sling (84), and/or Burch colposuspension (7). Mean odds ratio time was 242 ± 69.9 minutes, and median length of stay was 1 day. Intraoperative complications were as follows: cystotomy (4), vaginotomy (4), conversion to open (2), bowel injury/aborted (1), adhesions/aborted (1), and ureteral injury (1). Women with complications had greater blood loss than those without complications (P = 0.0015). Immediate (<30 days) postoperative complications were rare: port-site hernia (2), discitis (1), ileus (1), and ulnar neuropraxia (3). At median follow-up of 9 months (range, 0-85 months), 14 women had recurrent grade 3 prolapse, and 4 had grade 2 apical prolapse. Nine of 14 women had additional prolapse repair at a mean of 9.5 ± 6.3 months. Vaginal mesh exposure was detected in 12 (6.3%) of 192 women. There were 6 procedures for mesh exposure and 2 procedures for exposed sutures. One mesh erosion into the bladder required open excision. Conclusions: In this large series of robotic prolapse repair, complications are infrequent. Short-term apical outcomes are excellent. Few women required additional compartment repairs within 1 year with 6% rate of mesh exposure.

Haidar-Elatrache S, Wolf M, Fabie NAV and **Sahai S** (2018). "Approach to children with aggressive behavior for general pediatricians and hospitalists: Part 2-evaluation, tests, and treatment." Pediatric Annals 47(10): e408-e412.

[Request Form](#)

Department of Pediatrics

After reviewing the various etiologies that can contribute to a presentation of aggressive behavior in a child (see part 1), a physician should conduct a thorough history and physical examination. The history should be obtained from the patient and caregivers, both together and separately in adolescents. A good physical examination starts with assessment and interpretation of vital signs, followed by a head-to-toe examination focusing on the skin, eyes, and thyroid, and then a neurologic examination. The testing and observation should be tailored to the individual patient, including laboratory results, imaging, and specialist consultation. Management of aggressive behavior can often be achieved through a combination of environmental modifications and verbal techniques, with special consideration given to children with neurodevelopmental problems such as autism. Pharmacologic agents are a good next step, and physical restraints can be used as a last resort. Evaluation of suicidality with thorough and complete questioning as well as assessment of a safety plan can aid in determining patient disposition such as need for admission to a psychiatric facility.

Hakim S, Ramireddy S, **Amin M, Gebara S** and **Cappell MS** (2018). "Preoperative misdiagnosis of intestinal Behçet's Syndrome as Crohn's Disease based on superficial colonoscopic biopsies: Case report and systematic review." [Digestive Diseases and Sciences](#) 63(12): 3509-3515.

[Full Text](#)

Department of Pediatrics

Department of Pathology

Department of Internal Medicine

Halka JT, Vasyluk A, **Demare A, Iacco A** and **Janczyk R** (2018). "Hybrid robotic-assisted transversus abdominis release versus open transversus abdominis release: a comparison of short-term outcomes." [Hernia](#) 23(1): 37-42.

[Full Text](#)

OUIWB Medical Student Author

Department of Surgery

Although the open transversus abdominis release (oTAR) is an effective operation for large ventral hernias, it is historically associated with a relatively long length of stay. Robotic retromuscular transversus abdominis release (rTAR) allows minimally invasive repair of complex ventral hernias with shorter length of stay (LOS) compared to open repairs (TAR), but hybrid robotic TAR (hrTAR), partial open intervention via incision through the overlying hernia sac for fascial closure, may be required to accomplish effective repair of large defects. We compare LOS and short-term outcomes of a cohort of our hrTAR patients to our historical oTAR patients.

Halka JT, **Yee D, Angus A**, Mohammed A, Sevak S and **Robbins J** (2018). "Alexis St. Martin gastropexy: A novel technique for gastropexy during percutaneous endoscopic gastrostomy tube placement." [Surgical Laparoscopy Endoscopy & Percutaneous Techniques](#). ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine

OUIWB Medical Student Author

Background: Percutaneous endoscopic gastrostomy (PEG) is a preferred method of long-term enteral nutritional support. Despite its ease of placement, it has a 4% major complication rate, requiring surgical intervention or hospitalization. Early PEG tube dislodgment can cause peritonitis, requiring emergent laparotomy at significant morbidity and cost. T-fasteners have been used as an adjunct gastropexy, but nearly one third migrate into the abdominal wall within the first 2 weeks. We describe a low-cost, minimally invasive technique using widely available surgical instruments to appose the gastric and abdominal walls. Methods: All PEG procedures were performed in our 60-bed surgical intensive care unit. Institutional IRB approval was obtained along with procedure specific consent for all patients. The adjunctive gastropexy procedure was performed on four patients at high risk for early PEG tube dislodgment. Following routine PEG tube placement, both ends of four 2-0 polyglactin ties were brought through the gastric and abdominal walls through separate stab incisions adjacent to the PEG tube exit site in the 3, 6, 9, and 12 o'clock positions. These were tied in the subcutaneous tissue, securing the gastric wall to the abdominal wall. Results: No PEG tube complications occurred. All patients were discharged to long-term care facilities with PEG tubes intact or electively removed. Conclusions: We describe the results of a pilot study for a cost-effective, easily implementable, adjunct technique, named after the namesake of our institution, to decrease the incidence and severity of complications associated with PEG tube dislodgment. It was used in 4 patients at high risk for PEG tube dislodgment with satisfactory early results in all 4. Further recruitment of larger numbers of patients using this technique is ongoing to determine if this technique is truly effective at reducing PEG tube complications.

Hamouri S, Swesi F and **Novotny NM** (2018). "Unique challenges to the approach and management of pediatric headscarf pin aspiration." [Journal of Laparoendoscopic and Advanced Surgical Techniques](#) 28(10): 1243-1247.

[Request Form](#)

Department of Surgery

Background: Headscarf use is becoming more common throughout the world. Many articles describe the problem of aspirated headscarf pins but few if any give technical details for retrieval or innovative methods

of removal if traditional bronchoscopy fails particularly in the pediatric population. Herein, we describe our method of deep sedation with laryngeal mask airway (LMA) and flexible bronchoscopy (FB) and retrieval with a stepwise algorithm if traditional FB fails. Methods: A retrospective review of pediatric patients with aspirated headscarf pins was performed. Patient demographics, symptomatology, procedure specifics, and outcomes were recorded. Results: Fifty-six patients had pins removed at our institution between January 2010 and May 2017. Ninety-one percent were female. Each had a history of aspiration of a needle confirmed by a chest X-ray. The most common presenting symptom was cough in 48%. Only a small minority had physical exam findings (9% either wheezing or decreased air entry). FB via LMA under deep sedation was used as a primary intervention and was successful in 52 of 56 cases (93%). Fluoroscopy was added to aid the FB in 3 cases and was successful in 2 of the 3 patients. Two patients underwent mini-thoracotomy for removal. All pins were removed successfully and none of the patients had any postprocedural complications. Conclusion: Surgeons caring for pediatric patients throughout the world should be knowledgeable in a common problem often facing girls wearing headscarves. Given the majority of the needles are in segmental bronchi in teenage girls, we recommend FB as the primary modality with the addition of fluoroscopy to guide if needed and video-assisted thoracoscopy or mini thoracotomy if less invasive methods fail.

Hart JC, Jr., Tanner M and Rooney DM (2018). "Electron microscopy of silicone irrigation/aspiration tips involved in posterior capsule rupture." Journal of Cataract and Refractive Surgery 44(12): 1517-1520.

[Full Text](#)

Department of Ophthalmology

We describe 2 cases of posterior capsule rupture caused by Alcon reusable silicone irrigation/aspiration (I/A) tips. Scanning electron microscopy and reflected light microscopy of these tips revealed burring of the inner metallic shafts and tears in the silicone sleeves. A review of surgical video revealed that posterior capsule ruptures caused by the I/A tips occurred when the posterior capsule was aspirated either through the aspiration port or through a tear in the silicone sleeve. Contact of the posterior capsule with the sharp metallic burrs on the inner metal tube can result in posterior capsule rupture.

Heinen F, Kaňovský P, Schroeder AS, Berweck S, Chambers HG, **Dabrowski E**, Geister TL, Dersch H, Martinez-Torres FJ, Lehn A, Pulte I and Gaebler-Spira D (2018). "Efficacy and safety of incobotulinumtoxinA for lower-limb spasticity in children and adolescents with cerebral palsy." Toxicon 156: S44.

[Full Text](#)

Department of Physical Medicine & Rehabilitation

Introduction: This prospective, multicenter, randomized, double-blind, pivotal Phase 3 study (TIM, NCT01893411) assessed 3 doses of incobotulinumtoxinA for lower-limb (LL) spasticity in children and adolescents with cerebral palsy (CP). **Methods:** Ambulant and nonambulant subjects (age 2 to 17 years), with Ashworth Scale plantar flexor (AS-PF) score ≥ 2 and a clinical need for multilevel treatment of unilateral pes equinus and flexed knee or adducted thigh, or bilateral pes equinus, were selected. Subjects were randomized (2:1:1, double blind) at sites across Europe, Russia, and South Korea to 2 injection cycles (ICs; flexible duration of 12 to 36 weeks based on clinical need) with incobotulinumtoxinA high- (total 16 U/kg, ≤ 400 U), mid- (total 12 U/kg, ≤ 300 U), or low-dose (total 4 U/kg, ≤ 100 U). Primary and co-primary variables were change from baseline to week 4, IC1, in AS-PF score and Investigator's Global Impression of Change of Plantar Flexor Spasticity Scale (GICS-PF) at week 4. Adverse events (AEs) were assessed. **Results:** Three hundred and eleven subjects were randomized and included in the efficacy and safety analyses. Baseline demographics were similar in all groups (54.3% male; median age [range], 6 [2 to 17] years). Clinically meaningful improvements in AS-PF score were seen with all incobotulinumtoxinA doses at week 4 in IC1 and IC2; Investigator's GICS-PF confirmed LL spasticity improvement at week 4, IC1, in all groups (Table). There were no significant between-group differences in these variables. In IC1 and IC2, the incidence of AEs by dose (high: 34.0%, 30.8%; mid: 19.5%, 21.1%; low: 23.1%, 28.8%) and incidence of serious AEs (high: 2.6%, 2.1%; mid: 0.0%, 1.4%; low: 3.8%, 4.1%) was similar. **Conclusions:** IncobotulinumtoxinA (4 to 16 U/kg, ≤ 100 to 400 U) was effective, with an acceptable safety and tolerability profile for multilevel treatment of LL spasticity in subjects with CP.

Henrichsen JL, Wilhem SK, Siljander MP, Kalma JJ and **Karadsheh MS** (2018). "Treatment of patella fractures." Orthopedics 41(6): e747-e755.

[Request Form](#)

OUWB Medical Student Author

Department of Orthopedic Surgery

Patella fractures comprise 1% of all fractures. Treatment options vary based on fracture displacement, classification, and patient factors. Traditionally, nonoperative treatment has been reserved for nondisplaced fractures. Many operative treatments are available with differing indications and levels of success. Tension band constructs have been the most commonly employed approach to fixation, with cerclage wiring for comminuted fractures. Recently, plate fixation of patella fractures has become more popular. Plating constructs offer a low-profile design with stable fixation, allowing for earlier mobilization and potentially improved functional outcomes. Data regarding the long-term outcomes of plating techniques are limited, and further studies are needed.

Hewitt T, Killinger KA, Hiller S, Boura JA and **Lutz M** (2018). "Exploring racial differences surrounding prostate cancer screening: Beliefs and attitudes in community dwelling men attending an urban men's health event." *American Journal of Men's Health* 12(6): 1929-1936.

[Full Text](#)

Department of Urology

OUWB Medical Student Author

The purpose of the study was to explore attitudes/beliefs in men attending an urban health fair to explore barriers to prostate cancer (PCa) screening. Five hundred and forty-four men attending the PCa booth at the fair in 2014 or 2015 completed questionnaires about PCa. Data were examined using Pearson's χ^2 , Fisher's Exact, and Wilcoxon rank tests after grouping men by African American (AA) and non-African American ethnicity. Three hundred and twenty-six (60%) men were AA and two hundred and eighteen (40%) were non-AA (89% white). Median age (54 vs. 56 years) and prior PCa screening were similar between AA and non-AA; income ($p = .044$) and education ($p = .0002$) differed. AA men were less likely to have researched prostate-specific antigen (PSA) on the internet ($p = .003$), but more used TV ($p = .003$) and media ($p = .0014$) as information sources. Family members had a stronger influence over screening decisions for AA men ($p = .005$). After reading PSA information, AA men were more likely to still be confused ($p = .008$). A higher proportion of AA men were less worried about dying from PCa ($p = .0006$), but would want treatment immediately instead of watchful waiting ($p < .0001$). Interestingly, a higher proportion of AA men indicated that they would prefer not to know if they had PCa ($p = .001$). Ultimately, more AA men had a PSA done (98.4% vs. 95.1%; $p = .031$). When considering screening eligible men, a higher proportion of AA men had an abnormal PSA (13.1% vs. 5.3%; $p = .037$). AA men's beliefs surrounding PCa differ from non-AA men, and should be considered when developing culturally appropriate education, screening, and treatment strategies for this group.

Huang D, Bastani A, Anderson W, Crabtree J, Kleiman S and Jones S (2018). "Communication and bed reservation: Decreasing the length of stay for emergency department trauma patients." *The American Journal of Emergency Medicine* 36(10): 1874-1879.

[Full Text](#)

OUWB Medical Student Author

Department of Emergency Medicine

Background: Prolonged emergency department (ED) length of stay (LOS) is associated with poorer clinical outcomes and patient experience. At our community hospital, trauma patients were experiencing extended ED LOS incommensurate with their clinical status. Our objective was to determine if operational modifications to patient flow would reduce the LOS for trauma patients. Method: We conducted a retrospective chart review of admitted trauma patients from January 1, 2015 to June 30, 2016 to study two interventions. First, a communication intervention [INT1], which required the ED provider to directly notify the trauma service, was studied. Second, a bed intervention [INT2], which reserved two temporary beds for trauma patients, was added. The primary outcome was the average ED LOS change across three time periods: (1) Baseline data [BASE] collected from January 1, 2015 to June 30, 2015, (2) INT1 data collected from July 1, 2015 to October 18, 2015, and (3) INT2 data collected from October 19, 2015 to June 30, 2016. Data was analyzed using descriptive statistics, two-sample t-tests, and multivariate linear regression. Results: A total of 777 trauma patients were reviewed, with 151, 150 and 476 reviewed during BASE, INT1, and INT2

time periods, respectively. BASE LOS for trauma patients was 389 min. After INT1, LOS decreased by 74.35 min (± 31.92 ; $p < 0.0001$). After INT2 was also implemented, LOS decreased by 164.56 min (± 22.97 ; $p < 0.0001$) from BASE LOS. Conclusion: Direct communication with the trauma service by the ED provider and reservation of two temporary beds significantly decreased the LOS for trauma patients.

Huang D, Kleiman S and Wasserman J (2018). "Emergency department homeless patient Medicaid status: Differences in demographics, morbidity, and care." *Annals of Emergency Medicine* 72(4): S119-S120.
Department of Emergency Medicine
Department of Foundational Medical Studies
OUWB Medical Student

Huang D, Kleiman S and Wasserman J (2018). "National trends in geriatric emergency department visits: demographics, morbidities, and hospital admission factors, 2011-2015." *Annals of Emergency Medicine* 72(4): S83-S83.
Department of Emergency Medicine
Department of Foundational Medical Studies
OUWB Medical Student Author

Huang JY, Chaudhary R, Cohen A, Fink K, Godlust S, Boockvar J, **Chinnaiyan P**, Marcus S and Campian J (2018). "A multicenter pilot phase II study of continuing TMZ with the addition of disulfiram and copper for refractory glioblastoma." *Neuro-Oncology* 20: 15-15.
Department of Radiation Oncology

Hughey AB, Gu X, Haymart B, Kline-Rogers E, **Almany S**, Kozlowski J, Besley D, Krol GD, Ahsan S, Kaatz S, Froehlich JB and Barnes GD (2018). "Warfarin for prevention of thromboembolism in atrial fibrillation: comparison of patient characteristics and outcomes of the "Real-World" Michigan Anticoagulation Quality Improvement Initiative (MAQI2) registry to the RE-LY, ROCKET-AF, and ARISTOTLE trials." *Journal of Thrombosis and Thrombolysis* 46(3): 316-324.
[Full Text](#)
Department of Internal Medicine

Randomized controlled trials (RCTs) examining warfarin use for stroke prevention in atrial fibrillation (AF) may not accurately reflect real-world populations. We aimed to determine the representativeness of the RCT populations to real-world patients and to describe differences in the characteristics of trial populations from trial eligible patients in a real-world setting. We hypothesized that a significant fraction of real-world patients would not qualify for the RE-LY, ROCKET-AF, and ARISTOTLE trials and that real-world patients qualifying for the studies may have more strokes and bleeding events. We compared the inclusion and exclusion criteria, patient characteristics, and clinical outcomes from RE-LY, ROCKET-AF, and ARISTOTLE against data from the Michigan Anticoagulation Quality Improvement Initiative (MAQI2), a regional network of six community- and academic-based anticoagulation clinics. Of the 1446 non-valvular AF patients in the MAQI2 registry taking warfarin, approximately 40–60% would meet the selection criteria used in RE-LY (788, 54.5%), ROCKET-AF (566, 39.1%), and ARISTOTLE (866, 59.9%). The most common reasons for exclusion from one or more trial were anemia (15.1%), other concurrent medications (11.2%), and chronic kidney disease (9.4%). Trial-eligible MAQI2 patients were older, more frequently female, with a higher rate of paroxysmal AF, and lower rates of congestive heart failure, previous stroke, and previous myocardial infarction than the trial populations. MAQI2 patients eligible for each trial had a lower rate of stroke and similar rate of major bleeding than was observed in the trials. A sizable proportion of real-world AF patients managed in anticoagulation clinics would not have been eligible for the RE-LY, ROCKET-AF, and ARISOTLE trials. The expected stroke risk reduction and bleeding risk among real-world AF patients on warfarin may not be congruent with published clinical trial data.

Iftikhar H, Zhang CD, Imam Z, Hehar J, Hehar J, **Grasso-Knight G** and **Nair GB** (2018). "Multiple calcified pulmonary nodules: Need not be what the eye doesn't see." *Chest* 154(4): 702A-703A.
Department of Internal Medicine
[Full Text](#)

Iftikhar H, Zhang CD and **Nair GB** (2018). "Role of respiratory pathogens in disease outcomes in hospitalized patients with interstitial lung disease." Chest 154(4): 445A-445A.

Department of Internal Medicine

[Full Text](#)

Iftikhar H, Zhang CD, Rodriguez FF and **Nair GB** (2018). "It's nuts! A poorly differentiated cancer due to chromosomal translocation." Chest 154(4): 701A-701A.

Department of Internal Medicine

[Full Text](#)

Jafri SM, Nguyen LN and **Sirls LT** (2018). "Recovery of urinary function after robotic-assisted laparoscopic prostatectomy versus radical perineal prostatectomy for early-stage prostate cancer." International Urology and Nephrology 50(12): 2187-2191.

[Full Text](#)

Department of Urology

Robotic-assisted laparoscopic prostatectomy (RALP) has largely replaced open radical prostatectomy in many centers. Radical perineal prostatectomy (RPP) is another less invasive approach that has not been widely adopted. RPP offers excellent exposure of the urinary sphincter and bladder neck that may provide good urinary function outcomes. We evaluate urinary function after RALP and RPP.

Jankowski RJ, Tu LM, Carlson C, Robert M, Carlson K, Quinlan D, Eisenhardt A, Chen M, Snyder S, Pruchnic R, **Chancellor M**, Dmochowski R, Kaufman MR and Carr L (2018). "A double-blind, randomized, placebo-controlled clinical trial evaluating the safety and efficacy of autologous muscle derived cells in female subjects with stress urinary incontinence." International Urology and Nephrology 50(12): 2153-2165.

[Full Text](#)

Department of Urology

The purpose of the study was to assess safety and efficacy of autologous muscle derived cells for urinary sphincter repair (AMDC-USR) in female subjects with predominant stress urinary incontinence.

Jayaschandran V, **Cheah C**, **Nair G**, Christensen P and **Halalau A** (2018). "Asthma control and education (Ace): USE of an electronic teaching tool to improve resident skills, knowledge, and self efficacy for teaching of inhaled therapies." Chest 154(4, Supplement): 566A.

[Full Text](#)

OUWB Medical Student Author

Department of Internal Medicine

Johnson MC, Quinn TJ, **Guerrero TM**, **Stevens CW**, Ye H and **Grills IS** (2018). "Early outcomes and toxicity after dose escalated radiation therapy using a simultaneous integrated boost technique for locally advanced Non-Small Cell Lung Cancer (NSCLC)." International Journal of Radiation Oncology Biology Physics 102(3): E687-E687.

Department of Radiation Oncology

[Full Text](#)

Jolly S, Schipper M, Sun Y, Paximadis PA, Kestin LL, **Grills IS**, Movsas B, Boike TP, Wilson M, Matuszak MM, Pierce LJ and Hayman JA (2018). "Impact of intensity modulated radiation therapy on acute toxicity in locally advanced lung cancer: Results of a large statewide multi-center cohort." International Journal of Radiation Oncology Biology Physics 102(3): S224-S224.

Department of Radiation Oncology

[Full Text](#)

Kahn J, Gupta A, Mukhopadhyay ND, Khan AJ, Haffty BG, Brown SE, **Chen PY**, Cuttino LW, Vicini FA and Arthur DW (2018). "Short course, two day accelerated hypofractionated partial breast balloon brachytherapy: A phase II multi-institutional trial." International Journal of Radiation Oncology Biology Physics 102(3): E576-E577.

Department of Radiation Oncology

[Full Text](#)

Kaňovský P, Heinen F, Schroeder S, Berweck S, Chambers HG, **Dabrowski E**, Geister TL, Dersch H, Lehn A, Pulte I, Martinez-Torres FJ and Gaebler-Spira D (2018). "Long-term safety and efficacy of incobotulinumtoxinA for lower- or combined upper- and lower-limb spasticity in children and adolescents with cerebral palsy." Toxicon 156: S56.

[Full Text](#)

Department of Physical Medicine & Rehabilitation

Kaura AS, Berlin NL, Momoh AO and Kozlow JH (2018). "State variations in public payer reimbursement for common plastic surgery procedures." Plastic and Reconstructive Surgery 142(6): 1653-1661.

[Full Text](#)

OUWB Medical Student Author

Background: Existing data suggest decreased willingness of plastic surgeons to participate in Medicare and Medicaid. Significant disparities exist in Medicare and Medicaid reimbursement for various general surgical procedures. The aims of this study were to investigate variations in Medicare and Medicaid reimbursement across the nation for common plastic surgery procedures. Methods: Medicare and Medicaid reimbursement data for 2017 were obtained by means of the Centers for Medicare & Medicaid Services and publicly available fee schedules from each state, respectively, for eight common plastic surgery procedures. The difference in Medicare and Medicaid reimbursement was calculated across all states. The difference in value ascribed to each procedure was determined by comparing the payment from each payer to the work relative value units. Results: Medicaid reimbursement rates were significantly lower for the selected procedures, with a median national discount of -25 percent (\$16.09 per work relative value unit) compared to Medicare. There were higher median rates of reimbursement per work relative value unit by Medicaid in only five states when compared to Medicare. Significant variations of more than 15 percent in the Medicaid-to-Medicare reimbursement ratios between our selected procedures were identified in 28 states. Conclusions: Variations exist between Medicare and Medicaid reimbursement for common plastic surgery procedures. The within-state variations in Medicaid reimbursement are likely reflective of important yet nontransparent differences in determining Medicaid reimbursement. These variations likely affect access to care for underserved populations. Professional societies should continue to convey the value of these important procedures and raise awareness regarding disparities in access to care.

Kesarwani P, **Prabhu A**, Kant S, Kumar P, **Graham S**, Buelow K, **Wilson GD** and **Chinnaiyan P** (2018). "Tryptophan metabolism contributes to radiation-induced immune checkpoint reactivation in glioblastoma." International Journal of Radiation Oncology Biology Physics 102(3): S27-S27.

Department of Radiation Oncology

Department of Pediatrics

Department of Obstetrics and Gynecology

[Full Text](#)

Khalil JG, Gandhi SD, **Park DK** and **Fischgrund JS** (2018). "Cutibacterium acnes in spine pathology: Pathophysiology, diagnosis, and management." Journal of the American Academy of Orthopaedic Surgeons. ePub Ahead of Print.

[Full Text](#)

Department of Orthopedic Surgery

Cutibacterium acnes, long thought to be skin flora of pathological insignificance, has seen a surge in interest for its role in spine pathology. C acnes has been identified as a pathogen in native spine infection and osteomyelitis, which has implications in the management compared with more commonly recognized pathogens. In addition, It has also been recognized as a pathogen in postoperative and implant-associated infections. Some evidence exists pointing to C acnes as an unrecognized source of otherwise aseptic pseudarthrosis. Recently, it is hypothesized that low virulent organisms, in particular C acnes, may play a role in degenerative disk disease and the development of Modic end plate changes found in MRI. To this end, controversial implications exist in terms of the use of antibiotics to treat certain patients in the setting of degenerative disk disease. C acnes continues to remain an expanding area of interest in spine pathology, with important implications for the treating spine surgeon.

Khoury J, Willner CA, Gbadamosi B, **Gaikazian S** and **Jaiyesimi I** (2018). "Demographics and survival in primary

effusion lymphoma: SLIER database analysis." [Blood](#) 132: 1.

Department of Internal Medicine

Kotsopoulos J, Hall E, Finch A, **Rosen B**, Murphy J, Narod SA and Cheung AM (2018). "Impact of a personal history of breast cancer on bone mineral density among women with a BRCA1 or BRCA2 mutation undergoing prophylactic bilateral salpingo-oophorectomy." [Journal of Bone and Mineral Research](#) 33: 393-393.

Department of Obstetrics & Gynecology

Kuban KCK, Heeren T, O'Shea TM, Joseph RM, Fichorova RN, Douglass L, Jara H, Frazier JA, Hirtz D, Taylor HG, Rollins JV, Paneth N, Ware J, Coster T, Hanson B, Wilson R, McGhee K, Lee P, Asgarian A, Sadhwani A, Perrin E, Neger E, Mattern K, Walkowiak J, Barron S, Shah B, Singh R, Smith A, Klein D, McQuiston S, 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, Anusinha 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, 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, Vogt K, Yamamoto H, Ryan S, Junaid D, Dawood H, Beatty N, Luu N, Tang V, Sassi RR and Pasicznyk J-M (2018). "Among children born extremely preterm a higher level of circulating neurotrophins is associated with lower risk of cognitive impairment at school age." [The Journal of Pediatrics](#) 201: 40-48.e4.

[Full Text](#)

Department of Pediatrics

Objectives: To test the hypothesis that higher blood levels of neurotrophic proteins (proteins that support neuronal survival and function) in the first 2 weeks of life are associated with a lower risk of cognitive impairment at 10 years. **Study Design:** We evaluated 812 10-year-old children with neonatal blood specimens enrolled in the multicenter prospective Extremely Low Gestational Age Newborn Study, assessing 22 blood proteins collected on 3 days over the first 2 weeks of life. Using latent profile analysis, we derived a cognitive function level based on standardized cognitive and executive function tests. We defined high exposure as the top quartile neurotrophic protein blood level on ≥ 2 days either for ≥ 4 proteins or for a specific cluster of neurotrophic proteins (defined by latent class analysis). Multinomial logistic regression analyzed associations between high exposures and cognitive impairment. **Results:** Controlling for the effects of inflammatory proteins, persistently elevated blood levels of ≥ 4 neurotrophic proteins were associated with reduced risk of moderate (OR, 0.35; 95% CI, 0.18-0.67) and severe cognitive impairment (OR, 0.22; 95% CI, 0.09-0.53). Children with a cluster of elevated proteins including angiotensin 1, brain-derived neurotrophic factor, and regulated upon activation, normal T-cell expressed, and secreted had a reduced risk of adverse cognitive outcomes (OR range, 0.31-0.6). The risk for moderate to severe cognitive impairment was least with 0-1 inflammatory and >4 neurotrophic proteins. **Conclusions:** Persisting elevations of circulating neurotrophic proteins during the first 2 weeks of life are associated with lowered risk of impaired cognition at 10 years of age, controlling for increases in inflammatory proteins.

Lee JI and **Koh JY** (2018). "Impact of clinicopathologic factors on survival in patients with sebaceous carcinoma of the eyelid — a population-based analysis." [Orbit](#): 1-8.

[Request Form](#)

OUWB Medical Student Author

Department of Ophthalmology

Purpose: To evaluate prognostic factors and survival of patients with sebaceous carcinoma of the eyelid through a population-based analysis. **Methods:** A total of 940 patients with primary sebaceous carcinoma of the eyelid were derived from the Surveillance, Epidemiology, and End Results (SEER) database in the United States from 1973 to 2013. Kaplan-Meier univariate analysis and Cox Regression multivariate analysis were performed to examine prognostic factors in overall survival (OS). 5- and 10-year survival rates, median survival, and prognostic variables with statistical significance were measured. **Results:** Kaplan-Meier analysis showed that OS is 66% and 44% at 5 years and 10 years respectively. Median OS is 9.4 years. Multivariate Cox regression analysis demonstrated that independent prognostic factors for OS are age at diagnosis (HR = 4.61 [95% CI 1.93-11.0], $P = 0.001$), surgical treatment (HR = 0.196 [95% CI 0.07-0.55], $P = 0.002$), combined surgical and radiation treatment (HR = 0.227 [95% CI 0.06-0.81], $P = 0.023$), and greater tumor size at

diagnosis (HR = 3.381, [95% CI 1.77-6.45], P < 0.001). Conclusion: We report the largest population study to date to evaluate prognostic factors of patients with sebaceous carcinoma of the eyelid. Multivariate analysis shows that older age, and greater tumor size correlate with decreased overall survival, whereas surgical treatment or combined surgical and radiation treatment correlate with increased overall survival. Interestingly, tumor grade, lymph node involvement, and distant extent of tumor have not demonstrated to be independent prognostic factors for overall survival.

Lee SE, Chang HJ, Sung JM, Park HB, Heo R, Rizvi A, Lin FY, Kumar A, Hadamitzky M, Kim YJ, Conte E, Andreini D, Pontone G, Budoff MJ, Gottlieb I, Lee BK, Chun EJ, Cademartiri F, Maffei E, Marques H, Leipsic JA, Shin S, Choi JH, **Chinnaiyan K, Raff G**, Virmani R, Samady H, Stone PH, Berman DS, Narula J, Shaw LJ, Bax JJ and Min JK (2018). "Effects of statins on coronary atherosclerotic plaques: The PARADIGM study." *JACC. Cardiovascular Imaging* 11(10): 1475-1484.

[Full Text](#)

Department of Internal Medicine

Conclusions: Statins were associated with slower progression of overall coronary atherosclerosis volume, with increased plaque calcification and reduction of high-risk plaque features. Statins did not affect the progression of percentage of stenosis severity of coronary artery lesions but induced phenotypic plaque transformation. (Progression of Atherosclerotic Plaque Determined by Computed Tomographic Angiography Imaging [PARADIGM]; NCT02803411). Objectives: This study sought to describe the impact of statins on individual coronary atherosclerotic plaques. Methods: We performed a prospective, multinational study consisting of a registry of consecutive patients without history of coronary artery disease who underwent serial coronary computed tomography angiography at an interscan interval of ≥ 2 years. Atherosclerotic plaques were quantitatively analyzed for percent diameter stenosis (%DS), percent atheroma volume (PAV), plaque composition, and presence of high-risk plaque (HRP), defined by the presence of ≥ 2 features of low-attenuation plaque, positive arterial remodeling, or spotty calcifications. Background: Although statins reduce the risk of major adverse cardiovascular events, their long-term effects on coronary atherosclerosis remain unclear. Results: Among 1,255 patients (60 ± 9 years of age; 57% men), 1,079 coronary artery lesions were evaluated in statin-naïve patients ($n = 474$), and 2,496 coronary artery lesions were evaluated in statin-taking patients ($n = 781$). Compared with lesions in statin-naïve patients, those in statin-taking patients displayed a slower rate of overall PAV progression ($1.76 \pm 2.40\%$ per year vs. $2.04 \pm 2.37\%$ per year, respectively; $p = 0.002$) but more rapid progression of calcified PAV ($1.27 \pm 1.54\%$ per year vs. $0.98 \pm 1.27\%$ per year, respectively; $p < 0.001$). Progression of noncalcified PAV and annual incidence of new HRP features were lower in lesions in statin-taking patients ($0.49 \pm 2.39\%$ per year vs. $1.06 \pm 2.42\%$ per year and 0.9% per year vs. 1.6% per year, respectively; all $p < 0.001$). The rates of progression to $>50\%$ DS were not different (1.0% vs. 1.4% , respectively; $p > 0.05$). Statins were associated with a 21% reduction in annualized total PAV progression above the median and 35% reduction in HRP development.

Levitin R, Sura K, **Dilworth JT** and **Chen PY** (2018). "Equivalent outcomes for accelerated partial breast irradiation for invasive lobular carcinoma: A matched pair analysis." *International Journal of Radiation Oncology Biology Physics* 102(3): E590-E590.

[Full Text](#)

Department of Radiation Oncology

Lin HY, Ye H, **Kernen KM**, **Hafron JM** and **Krauss DJ** (2018). "National cancer database comparison of radical cystectomy vs chemoradiotherapy for muscle-invasive bladder cancer: Implications of using clinical vs pathologic staging." *Cancer Medicine* 7(11): 5370-5381.

[Full Text](#)

Department of Urology

Department of Radiation Oncology

Purpose: To test the hypothesis that bladder preservation therapy consisting of definitive chemoradiotherapy (chemoRT) results in similar overall survival rates to radical cystectomy/chemotherapy when balancing baseline patient characteristics and initial (preoperative) clinical stage. Materials/Methods: A total of 7,322 patients with stage II-IV, M0 bladder cancer who were treated with cystectomy/chemo ($N = 5,664$) or definitive chemoRT ($N = 1,658$) were identified from the National Cancer Database. Baseline patient

characteristics were compared using Pearson's chi-square, Fisher's exact test, and Wilcoxon's rank sum tests. Cox regressions were used to investigate for variables significantly correlated with overall survival (OS). OS was compared between cystectomy/chemo vs chemoRT before and after propensity score matched pair analyses using Kaplan-Meier curves and log-rank tests. Results: Patients who underwent cystectomy/chemo were significantly younger than ones treated with definitive chemoRT (mean age 63.7 vs 75.2; $P < 0.001$). Age, race, Charlson/Deyo Comorbidity Score (CDCS), clinical stage, insurance status, and type of facility significantly correlated with OS ($P < 0.05$ for all covariates). Patients treated with cystectomy/chemo were younger, healthier with better CDCS, and more likely treated at academic facilities. Before matched pair analyses, OS was significantly better when treated with cystectomy/chemo (3 year 56.4%; 5 year 45.9%) compared to chemoRT (3 year 47.3%; 5 year 33.2%) ($P < 0.001$); 28.6% of patients undergoing cystectomy were upstaged at the time of surgery. After matched pair analyses matching age, race, sex, CDCS, clinical (presurgical) stage, insurance, and facility type ($N = 1,750$), OS was no longer significantly different between cystectomy/chemo (3 year 52.1% and 5 year 41.0%) vs chemoRT (3 year 53.3% and 5 year 40.1%) ($P = 0.5$). Conclusions: Patients treated with cystectomy/chemo were significantly younger and healthier compared to those treated with chemoRT. Once these factors were accounted for in propensity score matched pair analyses using clinical stage, overall survival was not significantly different between cystectomy/chemo and an organ-sparing approach with definitive chemoRT.

Lin HYD, Galoforo S and **Wilson GD** (2018). "The role of CD44 in modulating radiosensitivity in vitro." International Journal of Radiation Oncology Biology Physics 102(3): E191-E191.

Department of Radiation Oncology

[Full Text](#)

Lin HYD, Sebastian E, **Dilworth JT**, Limbacher A, Ye H, **Grills IS**, **Jawad MS** and **Chen PY** (2018). "Dosimetric parameters correlated with acute and chronic toxicity from single entry applicator accelerated partial breast irradiation." International Journal of Radiation Oncology Biology Physics 102(3): E611-E611.

Department of Radiation Oncology

[Full Text](#)

Macari D, Gbadamosi B, Ezekwudo DE, **Anderson J**, **Jaiyesimi I** and **Stender M** (2018). "Vascular access device complications during induction chemotherapy for AML: A single institutional analysis." Blood 132: 2.

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 18(11): 2091-2101.

[Full Text](#)

Department of Orthopedic Surgery

Background Context: Degenerative disc disease (DDD) is associated with longitudinal remodeling of paravertebral tissues. Although 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: In vivo animal study involving a rat annulus fibrosus injury model of DDD. Methods Eight female Lewis rats were assigned to intervertebral disc (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 micro computed tomography imaging (10- μm voxel size) was performed 1 week before 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 preoperative 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, endplate TMD, and endplate apparent bone mineral density were all significantly greater in Puncture compared with Sham at 4 weeks and each subsequent timepoint. Puncture rats exhibited marginally lower endplate total volume. Anterior endplate osteophyte formation and central physal 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.

Majdalany BS, Kobeissi S, Goodson CI, **Kanaan CN**, Saad WEA and Khaja MS (2018). "Acute pulmonary embolism." Journal of Radiology Nursing 37(4): 222-225.

[Full Text](#)

OUIWB Medical Student Author

Martin S, Han E and **Gillera J** (2018). "Salvage combination therapies for refractory overactive bladder." Current Bladder Dysfunction Reports 13(4): 301-308.

[Full Text](#)

Department of Urology

With a high prevalence of overactive bladder (OAB) worldwide and rising health care costs for patients who fail first-, second-, and third-line treatments, there is a growing need to explore novel strategies to address the most refractory cases of OAB. The concept of utilizing combination treatment regimens to maximize efficacy while minimizing morbidity and side effects, in a cost-effective manner, is discussed in this review article.

Mells AJ, Padela MT, Sleiman B, Chamernik B, Zarling BJ and Sayeed Z (2018). "Walk a mile in the leadership's shoes: Why focus on quality improvement?" Orthopedic Clinics of North America 49(4): 411-417.

[Full Text](#)

OUIWB Medical Student Author

Quality Improvement (QI) throughout health care in the United States continues to be of growing importance to both patients and providers. Leaders in health care including physicians, nurses, hospital administrators, and payors are all responsible for ensuring the continuation and growth of QI initiatives. This article will discuss various ways that healthcare leaders, with specific regard to orthopedic surgery, have utilized QI measures to provide better, more efficient, care to patients.

Moshfeghi DM and **Capone A** (2018). "Economic barriers in retinopathy of prematurity management." Ophthalmology Retina 2(12): 1177-1178.

[Request Form](#)

Department of Ophthalmology

Mrak RE, Parslow TG and **Ducatman BS** (2018). "Benchmarking subspecialty practice in academic anatomic pathology: The 2017 Association of Pathology Chairs survey." Academic Pathology 5: 2374289518798556-2374289518798556.

[Full Text](#)

Department of Pathology

Assessment of physician workloads has become increasingly important in modern academic physician practice, where it is commonly used to allocate resources among departments, to determine staffing, and to set the compensation of individual physicians. The physician work relative value unit system is a frequently used metric in this regard. However, the application of this system to the practice of pathology has proven problematic. One area of uncertainty is the validity of using work relative value unit norms that were derived from general surgical pathology practice to assess the various subspecialties within anatomic pathology. Here, we used data from the 2017 Association of Pathology Chairs practice survey to assess salary and work relative value unit data for single-subspecialty practitioners in US academic pathology departments in the prior year (2016). Five subspecialties were evaluated: dermatopathology, gastrointestinal pathology, hematopathology/hematology, renal pathology, and neuropathology. Data for general surgical pathologists and cytopathologists were included for comparison. For this analysis, survey data were available for 168 practitioners in 43 US academic departments of pathology. Salary ranges varied little among subspecialties, with the exception of dermatopathology, where salaries were higher. In contrast, work relative value unit productivity varied widely among different subspecialties, with median values differing as much as 4- to 7-fold between subspecialties. These results suggest that the use of a single overall work relative value unit

standard is not appropriate for specialty- or subspecialty-based anatomic pathology practice, and that either the benchmark norms should be tailored to individual practice patterns, or an alternative system of workload measurement should be developed.

Mroue K, **Masri A, Bastani A** and **Jones S** (2018). "When will I feel better: 7-and 30-day follow-ups of adult patients presenting with dizziness." *Annals of Emergency Medicine* 72(4): S136-S136.

Department of Emergency Medicine

OUIB Medical Student Author

[Full Text](#)

Mulpuri K, Schaeffer EK, Sanders J, **Zaltz I** and Kocher MS (2018). "Evidence-based recommendations for pediatric orthopaedic practice." *Journal of Pediatric Orthopaedics* 38(9): e551-e555.

[Full Text](#)

Department of Orthopedic Surgery

Background: The evidence-based approach to guide clinical practice has gained great importance in the medical field. High-quality evidence is of paramount importance to inform clinical decision-making and optimize patient outcomes. The generation of high-quality evidence relies on sound methodology and study design to facilitate appropriate interpretation and subsequent application of the clinical findings. The purpose of this review is to objectively critique the methodological design and clinical findings of 2 pediatric orthopaedic studies on children with cerebral palsy (CP) to assess their potential to impact clinical practice. Methods: This is the second in a series of evidence-based reviews in pediatric orthopaedics. The pediatric orthopaedic literature was reviewed for randomized controlled trials (RCTs) published in 2015 and 2016. One RCT was selected from the journal *Pediatrics*, and one RCT was selected from the journal *Developmental Medicine and Child Neurology*, both investigating the use of botulinum toxin for the treatment of spastic equinus in children with CP. These RCTs were subjected to in-depth methodological review by orthopaedic surgeons with advanced research degrees and a PhD researcher. Two clinical experts then 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 single-dose efficacy and safety of botulinum neurotoxin type-A (1BoNT-A) in children with CP-associated spasticity and equinus foot deformity. The reviewers deemed the placebo-controlled study to be of sound design, and conclusions appropriate for the methodology used and clinical findings. Although findings suggest 1BoNT-A may provide benefit in treating equinus foot deformity, the optimal dose for achieving maximal impact on functional improvement remains undetermined. The second study reviewed investigated the impact of multiple dosing schedules on spastic equinus in CP. Although of relatively sound design, this study was limited by a small sample size and lack of justification for the chosen effect size. Without further study, no recommendation to change clinical practice could be made. Conclusions: Both RCTs reviewed were superiority studies, the first demonstrating efficacy of botulinum toxin over placebo, the second showing no significant difference in 4- and 12-monthly botulinum toxin injections. Significance: Despite a positive result demonstrating an effect of botulinum toxin treatment on spastic equinus in CP, the long-term functional impact and optimal dose remains to be determined. In addition, the negative result in the second study demonstrates the need for a noninferiority trial design to appropriately demonstrate no difference between 2 treatment options.

Nasaruddin ML, Pan X, McGuinness B, Passmore P, Kehoe PG, Hölscher C, **Graham SF** and Green BD (2018). "Evidence that parietal lobe fatty acids may be more profoundly affected in moderate Alzheimer's Disease (AD) pathology than in severe AD pathology." *Metabolites* 8(4): 69.

[Full Text](#)

Department of Obstetrics and Gynecology

Brain is a lipid-rich tissue, and fatty acids (FAs) play a crucial role in brain function, including neuronal cell growth and development. This study used GC-MS to survey all detectable FAs in the human parietal cortex (Brodmann area 7). These FAs were accurately quantified in 27 cognitively normal age-matched controls, 16 cases of moderate Alzheimer's disease (AD), 30 severe AD, and 14 dementia with Lewy bodies (DLB). A total of 24 FA species were identified. Multiple comparison procedures, using stepdown permutation tests, noted

higher levels of 13 FAs but the majority of changes were in moderate AD and DLB, rather than severe AD. Subjects with moderate AD and DLB pathology exhibited significantly higher levels of a number of FAs (13 FAs and 12 FAs, respectively). These included nervonic, lignoceric, cis-13,16-docosadienoic, arachidonic, cis-11,14,17-eicosatrienoic, erucic, behenic, α -linolenic, stearic, oleic, cis-10-heptanoic, and palmitic acids. The similarities between moderate AD and DLB were quite striking-arachidic acid was the only FA which was higher in moderate AD than control, and was not similarly affected in DLB. Furthermore, there were no significant differences between moderate AD and DLB. The associations between each FA and a number of variables, including diagnosis, age, gender, A β plaque load, tau load, and frontal tissue pH, were also investigated. To conclude, the development of AD or DLB pathology affects brain FA composition but, intriguingly, moderate AD neuropathology impacts this to a much greater extent. Post-mortem delay is a potential confounding factor, but the findings here suggest that there could be a more dynamic metabolic response in the earlier stages of the disease pathology.

Nguyen BK, Patel NM, **Arianpour K**, Svider PF, Folbe AJ, Hsueh WD and Eloy JA (2018). "Characteristics and management of sinonasal paragangliomas: a systematic review." International Forum of Allergy & Rhinology 9(4): 413-426.

[Full Text](#)

OUWB Medical Student Author

Background: Paragangliomas of the nasal cavity and paranasal sinuses, although exceedingly rare, can exhibit frequent and aggressive recurrences. Our objective was to evaluate tumor characteristics, clinical course, management, and associated complications of sinonasal paragangliomas. Methods: A systematic review of the literature was performed utilizing the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines, searching for sinonasal paraganglioma. Studies meeting inclusion criteria were assessed for level of evidence. Patient demographics, tumor characteristics, primary intervention, and other clinical characteristics were evaluated. Results: Forty-five relevant studies encompassing 54 patients with sinonasal paraganglioma were identified. The most common tumor locations were the nasal cavity (66.7%), ethmoid sinuses (22.2%), maxillary sinuses (7.4%), and sphenoid sinuses (3.7%). Common presenting symptoms included recurrent epistaxis (68.5%), nasal obstruction (53.7%), and headache (13.0%). Tumors were malignant in 28.6% of patients. Only 4 cases (7.4%) involved functional tumors. Initial management was always surgical, via either an open (63.0%) or endoscopic (33.3%) approach. Radiotherapy was used as adjunctive treatment in 10 cases (18.5%). Recurrence rate was 21.7% and occurred between 12 to 156 months after initial resection. The overall survival was 87.0% with a metastatic rate of 8.7%. Conclusion: Sinonasal paragangliomas are vascular neoplasms manifesting clinically with recurrent epistaxis and nasal obstruction. Management goals are total resection with clear margins and long-term follow-up due to tendency for local recurrence. Radiotherapy has been utilized as adjuvant therapy with variable results. Further randomized controlled studies may be invaluable in elucidating these findings.

Nguyen RT, Hauck CR, **Dilworth JT**, Ye H, Marvin K, **Gustafson GS**, **Chen PY** and **Jawad MS** (2018). "Comparative outcome analysis of two dose schedules for post-mastectomy radiation therapy." International Journal of Radiation Oncology*Biophysics 102(3, Supplement): e612-e613.

[Full Text](#)

OUWB Medical Student Author

Department of Radiation Oncology

Omar H, **Yue R**, **Amen AA**, **Kowalenko T** and **Walters BL** (2018). "Reassessment of violence against emergency physicians." Annals of Emergency Medicine 72(4): S144-S144.

OUWB Medical Student Author

Department of Emergency Medicine

[Full Text](#)

Orelaru FO, Reddy NS and **Brahmamdham P** (2018). "Perforated Meckel's diverticulum in a neonate." Journal of Pediatric Surgery Case Reports 37: 37-40.

[Full Text](#)

OUWB Medical Student Author

Department of Surgery

Background: Meckel's diverticulum (MD) is a true diverticulum in the small intestine due to an incomplete obliteration of the vitelline duct. It is commonly located within two feet from the ileocecal valve and occurs in approximately two percent of the population before the age of two years. Meckel's diverticulum is often clinically silent but when symptomatic (4%), it could present with gastrointestinal bleeding, bowel obstruction, perforation or diverticulitis. Case: A 1900g male infant was born at 31 weeks and six days. He was placed on CPAP for poor respiratory effort, and was transported to our intensive care unit immediately after delivery. By day of life three, he had failed to pass meconium and developed signs of intestinal perforation prompting surgical exploration. A perforated Meckel's diverticulum was discovered and he underwent a small bowel resection with primary anastomosis. Histopathology study of resected bowel showed a small intestine with focal mural necrosis and perforation, and marked serositis with abundant acute on chronic inflammation. We present a case of a neonatal symptomatic MD in a preterm infant with failure to pass meconium without obstruction on imaging, and an extensive literature review on this topic in the last 40 years. Conclusion: The literature review and our case show that it can be safe to perform primary anastomosis after resection for perforated MD in the neonatal population, even in those of low birth weight.

Pai E, Altvail M, Gugneja M, Bastani A and Jones S (2018). "Aligning incentives to optimize patient care: Effect of a novel locally derived deep venous thrombosis treatment guideline." *Annals of Emergency Medicine* 72(4): S146-S146.

Department of Emergency Medicine

OUIB Medical Student Author

[Full Text](#)

Pang YF, **Gaikazian S** and Gbadamosi B (2018). "Utility of bone marrow biopsy in pre-liver transplant evaluation of cytopenia." *Hepatology* 68: 571A-571A.

Department of Internal Medicine

Peacock WF, Rafique Z, **Clark CL**, Singer AJ, Turner S, Miller J, Char D, Lagina A, Smith LM, Blomkalns AL, Caterino JM and Kosiborod M (2018). "Real world evidence for treatment of hyperkalemia in the emergency department (REVEAL-ED): A multicenter, prospective, observational study." *The Journal of Emergency Medicine* 55(6): 741-750.

[Full Text](#)

Department of Emergency Medicine

Background: Contemporary emergency department (ED) standard-of-care treatment of hyperkalemia is poorly described. Objective: Our aim was to determine the treatment patterns of hyperkalemia management in the ED. Methods: This multicenter, prospective, observational study evaluated patients aged ≥ 18 years with hyperkalemia (potassium [K⁺] level ≥ 5.5 mmol/L) in the ED from October 25, 2015 to March 30, 2016. K⁺-lowering therapies and K⁺ were documented at 0.5, 1, 2, and 4 h after initial ED treatment. The primary end point was change in K⁺ over 4 h. Results: Overall, 203 patients were enrolled at 14 U.S.-based sites. The initial median K⁺ was 6.3 (interquartile range [IQR] 5.7–6.8) mmol/L and median time to treatment was 2.7 (IQR 1.9–3.5) h post-ED arrival. Insulin/glucose (n = 130; 64%) was frequently used to treat hyperkalemia; overall, 43 different treatment combinations were employed within the first 4 h. Within 4 h, the median K⁺ for patients treated with medications alone decreased from 6.3 (IQR, 5.8–6.8) mmol/L to 5.3 (4.8–5.7) mmol/L, while that for patients treated with dialysis decreased from 6.2 (IQR 6.0–6.6) mmol/L to 3.8 (IQR 3.6–4.2) mmol/L. Hypoglycemia occurred in 6% of patients overall and in 17% of patients with K⁺ > 7.0 mmol/L. Hyperkalemia-related electrocardiogram changes were observed in 23% of all patients; 45% of patients with K⁺ > 7.0 mmol/L had peaked T waves or widened QRS. Overall, 79% were hospitalized; 3 patients died. Conclusions: Hyperkalemia practice patterns vary considerably and, although treatment effectively lowered K⁺, only dialysis normalized median K⁺ within 4 h.

Possley D, **Luczak SB, Angus A** and Montgomery D (2018). "T1-T2 disk herniation presenting with horner syndrome: A case report with literary review." *Journal of the American Academy of Orthopaedic Surgeons. Global Research & Reviews* 2(11): e016-e016.

[Full Text](#)

OUIB Medical Student Author

Horner syndrome or oculosympathetic paresis is caused by interruption of the sympathetic nerve supply to

the face and eye that manifests as facial anhidrosis, blepharoptosis, and miosis. This sympathetic pathway begins in the hypothalamus and synapses in the intermediolateral gray substance of the spinal cord at C8-T2 levels making it susceptible to disruption via a high thoracic intervertebral disk herniation. We present a rare case of a patient with T1-T2 intervertebral disk herniation and Horner syndrome who was treated surgically. After confirming the diagnosis with MRI, the patient was treated with standard posterior approach with laminoforaminotomy and discectomy. Although posterior approach surgery is most commonly used for laminectomy and/or foraminotomy, successful anterior approaches to upper thoracic lesions are valid as well. Our patient had resolution of his back pain, paresthesias, and grip weakness at 6 weeks postoperatively, but his Horner syndrome persisted at latest follow-up. Patients with cervical radiculopathy symptoms and physical examination findings consistent with Horner syndrome should be evaluated with a MRI that includes the upper thoracic spine. An accurate diagnosis and timely surgical intervention may provide the patient the best chance for regression of symptoms and a satisfactory outcome.

Prabhu AH, Kesarwani P, Kant S, Ahmed K, Forsyth P, Nakano I and **Chinnaiyan P** (2018). "Integrative cross-platform analyses identify enhanced heterotrophy as a metabolic hallmark in glioblastoma." Neuro-Oncology 21(3): 337-347.

[Full Text](#)

Department of Radiation Oncology

Although considerable progress has been made in understanding molecular alterations driving gliomagenesis, the diverse metabolic programs contributing to the aggressive phenotype of glioblastoma remain unclear. The aim of this study was to define and provide molecular context to metabolic reprogramming driving gliomagenesis. Integrative cross-platform analyses coupling global metabolomic profiling with genomics in patient-derived glioma (low-grade astrocytoma [LGA; n = 28] and glioblastoma [n = 80]) were performed. Identified programs were then metabolically, genomically, and functionally evaluated in preclinical models. Clear metabolic programs were identified differentiating LGA from glioblastoma, with aberrant lipid, peptide, and amino acid metabolism representing dominant metabolic nodes associated with malignant transformation. Although the metabolomic profiles of glioblastoma and LGA appeared mutually exclusive, considerable metabolic heterogeneity was observed in glioblastoma. Surprisingly, integrative analyses demonstrated that O6-methylguanine-DNA methyltransferase methylation and isocitrate dehydrogenase mutation status were equally distributed among glioblastoma metabolic profiles. Transcriptional subtypes, on the other hand, tightly clustered by their metabolomic signature, with proneural and mesenchymal tumor profiles being mutually exclusive. Integrating these metabolic phenotypes with gene expression analyses uncovered tightly orchestrated and highly redundant transcriptional programs designed to support the observed metabolic programs by actively importing these biochemical substrates from the microenvironment, contributing to a state of enhanced metabolic heterotrophy. These findings were metabolically, genomically, and functionally recapitulated in preclinical models. Despite disparate molecular pathways driving the progression of glioblastoma, metabolic programs designed to maintain its aggressive phenotype remain conserved. This contributes to a state of enhanced metabolic heterotrophy supporting survival in diverse microenvironments implicit in this malignancy.

Prabhu RS, Soltys SG, Turner BE, Marcrom S, Fiveash JB, Foreman PM, Press RH, Patel K, Curran WJ, Breen W, Brown PD, Jethwa KR, **Grills IS**, Arden JD, **Foster LM**, Manning M, Stern JD, Asher A and Burri SH (2018). "Patterns of failure and outcomes based on management of leptomeningeal disease after surgical resection and radiosurgery for brain metastases: A multi-institutional analysis." International Journal of Radiation Oncology*Biophysics 102(3, Supplement): S142-S143.

[Full Text](#)

Department of Radiation Oncology

OUIB Medical Student Author

Probst MA, Gibson TA, Weiss RE, Yagapen AN, Malveau SE, Adler DH, **Bastani A**, Baugh CW, Caterino JM, **Clark CL**, Diercks DB, Hollander JE, Nicks BA, Nishijima DK, Shah MN, Stiffler KA, Storrow AB, Wilber ST and Sun BC (2018). "Predictors of clinically significant echocardiography findings in older adults with syncope: A secondary analysis." Journal of Hospital Medicine 13(12): 823-828.

Department of Emergency Medicine

Background: Syncope is a common reason for visiting the emergency department (ED) and is associated with

significant healthcare resource utilization. Objective: To develop a risk-stratification tool for clinically significant findings on echocardiography among older adults presenting to the ED with syncope or nearsyncope. DESIGN: Prospective, observational cohort study from April 2013 to September 2016. Setting: Eleven EDs in the United States. Patients: We enrolled adults (>= 60 years) who presented to the ED with syncope or near-syncope who underwent transthoracic echocardiography (TTE). Measurements: The primary outcome was a clinically significant finding on TTE. Clinical, electrocardiogram, and laboratory variables were also collected. Multivariable logistic regression analysis was used to identify predictors of significant findings on echocardiography. Results: A total of 3,686 patients were enrolled. Of these, 995 (27%) received echocardiography, and 215 (22%) had a significant finding on echocardiography. Regression analysis identified five predictors of significant findings: (1) history of congestive heart failure, (2) history of coronary artery disease, (3) abnormal electrocardiogram, (4) high-sensitivity troponin-T > 14 pg/mL, and 5) N-terminal pro B-type natriuretic peptide > 125 pg/mL. These five variables make up the ROME0 (Risk Of Major Echocardiography findings in Older adults with syncope) criteria. The sensitivity of a ROME0 score of zero for excluding significant findings on echocardiography was 99.5% (95% CI: 97.4%-99.9%) with a specificity of 15.4% (95% CI: 13.0%-18.1%). Conclusions: If validated, this risk-stratification tool could help clinicians determine which syncope patients are at very low risk of having clinically significant findings on echocardiography.

Qin A, Gersten D, Liang J, Liu Q, **Grills I**, **Guerrero T**, **Stevens C** and **Yan D** (2018). "A clinical 3D/4D CBCT-based treatment dose monitoring system." Journal of Applied Clinical Medical Physics 19(6): 166-176.

[Full Text](#)

Department of Radiation Oncology

To monitor delivered dose and trigger plan adaptation when deviation becomes unacceptable, a clinical treatment dose (Tx-Dose) reconstruction system based on three-dimensional (3D)/four-dimensional (4D)-cone beam computed tomography (CBCT) images was developed and evaluated on various treatment sites, particularly for lung cancer patient treated by stereotactic body radiation therapy (SBRT). This system integrates with our treatment planning system (TPS), Linacs recording and verification system (R&V), and CBCT imaging system, consisting of three modules: Treatment Schedule Monitoring module (TSM), pseudo-CT Generating module (PCG), and Treatment Dose Reconstruction/evaluation module (TDR). TSM watches the treatment progress in the R&V system and triggers the PCG module when new CBCT is available. PCG retrieves the CBCTs and performs planning CT to CBCT deformable registration (DIR) to generate pseudo-CT. The 4D-CBCT images are taken for target localization and correction in lung cancer patient before treatment. To take full advantage of the valuable information carried by 4D-CBCT, a novel phase-matching DIR scheme was developed to generate 4D pseudo-CT images for 4D dose reconstruction. Finally, TDR module creates TPS scripts to automate Tx-Dose calculation on the pseudo-CT images. Both initial quantitative commissioning and patient-specific qualitative quality assurance of the DIR tool were utilized to ensure the DIR quality. The treatment doses of ten patients (six SBRT-lung, two head and neck (HN), one breast and one prostate cancer patients) were retrospectively constructed and evaluated. The target registration error (mean \pm STD: 1.05 \pm 1.13 mm) of the DIR tool is comparable to the interobserver uncertainty (0.88 \pm 1.31 mm) evaluated by a publically available lung-landmarks dataset. For lung SBRT patients, the D(99) of the final cumulative Tx-Dose of GTV is 93.8 \pm 5.5% (83.7-100.1%) of the originally planned D(99). CTV D(99) decreases by 3% and mean ipsilateral parotid dose increases by 11.5% for one of the two HN patients. In conclusion, we have demonstrated the feasibility and effectiveness of a treatment dose verification system in our clinical setting.

Qin A, Ionascu D, Liang J, Han X, O'Connell N and **Yan D** (2018). "The evaluation of a hybrid biomechanical deformable registration method on a multistage physical phantom with reproducible deformation." Radiation Oncology 13(1): 240-240.

[Full Text](#)

Department of Radiation Oncology

Background: Advanced clinical applications, such as dose accumulation and adaptive radiation therapy, require deformable image registration (DIR) algorithms capable of voxel-wise accurate mapping of treatment dose or functional imaging. By utilizing a multistage deformable phantom, the authors investigated scenarios where biomechanical refinement method (BM-DIR) may be better than the pure image intensity

based deformable registration (IM-DIR). Methods: The authors developed a biomechanical-model based DIR refinement method (BM-DIR) to refine the deformable vector field (DVF) from any initial intensity-based DIR (IM-DIR). The BM-DIR method was quantitatively evaluated on a novel phantom capable of ten reproducible gradually-increasing deformation stages using the urethra tube as a surrogate. The internal DIR accuracy was inspected in term of the Dice similarity coefficient (DSC), Hausdorff and mean surface distance as defined in of the urethra structure inside the phantom and compared with that of the initial IM-DIR under various stages of deformation. Voxel-wise deformation vector discrepancy and Jacobian regularity were also inspected to evaluate the output DVFs. In addition to phantom, two pairs of Head&Neck patient MR images with expert-defined landmarks inside parotids were utilized to evaluate the BM-DIR accuracy with target registration error (TRE). Results: The DSC and surface distance measures of the inner urethra tube indicated the BM-DIR method can improve the internal DVF accuracy on masked MR images for the phases of a large degree of deformation. The smoother Jacobian distribution from the BM-DIR suggests more physically-plausible internal deformation. For H&N cancer patients, the BM-DIR improved the TRE from 0.339 cm to 0.210 cm for the landmarks inside parotid on the masked MR images. Conclusions: We have quantitatively demonstrated on a multi-stage physical phantom and limited patient data that the proposed BM-DIR can improve the accuracy inside solid organs with large deformation where distinctive image features are absent.

Quinn TJ, Ding X, **Wilson GD**, Sivananthan AP, Epperly M, Franicola D, Wipf P, Greenberger JS, **Stevens CW** and **Kabolizadeh P** (2018). "Proton radioprotection of fanconi anemia (Fanca-/-) mouse marrow stromal cell lines by mitochondrial targeted GS-nitroxide JP-4-039." International Journal of Radiation Oncology Biology Physics 102(3): E169-E169.

Department of Radiation Oncology

[Full Text](#)

Rapp CM, Shields EJ, **Wiater BP** and **Wiater JM** (9000). "Venous thromboembolism after shoulder arthroplasty and arthroscopy." JAAOS - Journal of the American Academy of Orthopaedic Surgeons. ePub Ahead of Print.

[Full Text](#)

Department of Orthopedic Surgery

Venous thromboembolism (VTE) in the orthopaedic literature largely focuses on lower extremity trauma and arthroplasty, with relatively few investigations of VTE after shoulder surgery. Because the rate of shoulder surgery, especially arthroplasty, continues to expand, it is important for practicing surgeons to understand the magnitude of risk, potential consequences, and prevention methods with regard to VTE. VTE after shoulder surgery has been a topic of increasing interest over the past decade, and the purpose of this review is to examine the recent literature on pathophysiology, risk factors, incidence, diagnosis, sequelae, prevention, treatment, and current recommendations regarding VTE after shoulder surgery.

Robinson LA, Tanvetyanon T, Grubbs D, Antonia S, Creelan B, Fontaine J, Toloza E, Keenan R, Dilling T, **Stevens CW**, Sommers KE and Vrionis F (2018). "Reply to Dickhoff et al. from authors of 'Induction chemoradiotherapy versus chemotherapy alone for superior sulcus lung cancer'." Lung Cancer 124: 322-323.

[Full Text](#)

Rodriguez FF and **Keena D** (2018). "18-centimeter pulmonary metastatic uterine leiomyosarcoma: Is that even possible?" Chest 154(4): 648A-648A.

Department of Internal Medicine

[Full Text](#)

Rodriguez FF, **Nair GB** and Iftikhar H (2018). "Massive stroke on anticoagulation; A case of nonbacterial thrombotic endocarditis in a patient with lung adenocarcinoma." Chest 154(4): 647A-647A.

Department of Internal Medicine

[Full Text](#)

Rutka E, Ye H and **Robertson J** (2018). "Factors related to patient satisfaction in radiation oncology." International Journal of Radiation Oncology Biology Physics 102(3): E732-E732.

Department of Radiation Oncology

[Full Text](#)

Saager L, Maiese EM, Bash LD, Meyer TA, Minkowitz H, Groudine S, Philip BK, Tanaka P, Gan TJ, Rodriguez-Blanco Y, **Soto R** and Heisel O (2019). "Incidence, risk factors, and consequences of residual neuromuscular block in the United States: The prospective, observational, multicenter RECITE-US study." Journal of Clinical Anesthesia 55: 33-41.

[Full Text](#)

Department of Anesthesiology

Study Objective: To determine the incidence burden and associated risk factors of residual neuromuscular block (rNMB) during routine U.S. hospital care. Design: Blinded multicenter cohort study. Setting: Operating and recovery rooms of ten community and academic U.S. hospitals. Patients: Two-hundred fifty-five adults, ASA PS 1–3, underwent elective abdominal surgery with general anesthesia and ≥ 1 dose of non-depolarizing neuromuscular blocking agent (NMBA) for endotracheal intubation and/or maintenance of NMB between August 2012 and April 2013. Interventions TOF measurements using acceleromyography were performed on patients already receiving routine anesthetic care for elective open or laparoscopic abdominal surgery. Measurements allowed assessment of the presence of residual neuromuscular block (rNMB), defined as a train-of-four (TOF) ratio < 0.9 at tracheal extubation. We recorded patient and procedural characteristics and assessed TOF ratios (T4/T1) at various times throughout the procedure and at tracheal extubation. Differences in patient and clinical characteristics were compared using Fisher's exact test for categorical variables and t-test for continuous variables. Multivariate logistic regression assessed risk factors associated with rNMB at extubation. Main Results: Most of the study population, 64.7% (n = 165) had rNMB (TOF ratio < 0.9), among them, 31.0% with TOF ratio < 0.6 . Among those receiving neostigmine and/or qualitative peripheral nerve stimulation per clinical decision, 65.0% had rNMB. After controlling for confounders, we observed male gender (odds ratio: 2.60, P = 0.008), higher BMI (odds ratio: 1.04/unit, P = 0.043), and surgery at a community hospital (odds ratio: 3.15, P = 0.006) to be independently associated with increased odds of rNMB. Conclusions: Assessing TOF ratios blinded to the care team, we found that the majority of patients (64.7%) in this study had rNMB at tracheal extubation, despite neostigmine administration and qualitative peripheral nerve stimulation used for routine clinical care. Qualitative neuromuscular monitoring and clinical judgement often fails to detect rNMB after neostigmine reversal with potential severe consequences to the patient. Our data suggests that clinical care could be improved by considering quantitative neuromuscular monitoring for routine care.

Sahai S and Kamat D (2018). "Common problems in general pediatrics." Pediatric Annals 47(10): e388-e389.

[Full Text](#)

Department of Pediatrics

Said A and **Dalal B** (2018). "Bevacizumab-induced atypical encephalopathy." Chest 154(4): 829A-829A.

Department of Internal Medicine

[Full Text](#)

Sala IM, Maurer BA, Myziuk NK, **Stevens CW** and **Guerrero TM** (2018). "High frequency percussive ventilation for chest wall motion immobilization." International Journal of Radiation Oncology Biology Physics 102(3): S206-S206.

Department of Radiation Oncology

[Full Text](#)

Sarode D, **Dalal B**, Ginoya S and Tominna M (2018). "Imagination of the images when viruses attack the lungs." Chest 154(4): 361A-361A.

Department of Internal Medicine

[Full Text](#)

Sevak S, **Lurvey B**, **Woodfin AA**, Hothem Z, Callahan RE, **Robbins J** and **Ziegler K** (2018). "Solid, cystic, and tubular: Novice ultrasound skills training using a versatile, affordable practice model." Journal of Surgical Education 75(5): 1403-1409.

[Full Text](#)

OUWB Medical Student Author
Department of Surgery

Objective: In spite of the recognized benefits of ultrasound, many physicians have little experience with using ultrasound to perform procedures. Many medical schools and residency programs lack a formal ultrasound training curriculum. We describe an affordable ultrasound training curriculum and versatile, inexpensive practice model. Design: Participants underwent a didactic session to teach the theory required to perform ultrasound-guided procedures. Motor skills were taught using a practice model incorporating analogs of common anatomic and pathologic structures into an opacified gelatin substrate. Setting: The Marcia and Eugene Applebaum Simulation Learning Institute, Beaumont Hospital, Royal Oak, MI; a private nonprofit tertiary care hospital associated with the OUWB School of Medicine, Rochester, MI. Participants: The model was tested in a cohort of 50 medical students and general surgery residents. Results The gelatin model can be constructed for \$1.03 per learner. The solid, cystic, and vascular structural analogs were readily identifiable on ultrasound and easily differentiated based on their echotextures. Eighty-four percent of participants successfully aspirated the cystic structure, 88% successfully biopsied a portion of the solid structure, and 76% successfully cannulated the tubular structure. Overall, 82% of participants achieved a passing score for the exercise based on a validated Objective Structured Assessment of Technical Skill instrument. There were no significant differences between the medical students and residents. Conclusion: This model can be used to teach basic ultrasound skills such as aspiration, biopsy, and vessel cannulation, providing a foundation for the use of ultrasound in a broad range of clinical procedures, as well as providing practice opportunities for medical students and residents to gain increased ultrasound competency and confidence.

Sevak S, **Woodfin A**, Hothem Z, Callahan R, **Robbins J** and **Ziegler K** (2018). "Gelatin thoracic paravertebral teaching model for placement of a continuous infusion catheter in the extrathoracic paravertebral space." *Journal of Surgical Education* 75(5): 1389-1394.

[Full Text](#)

OUWB Medical Student Author
Department of Surgery

Objective: Our aim was to develop an ultrasound-guided training curriculum for continuous infusion catheter placement in the paravertebral space and to create a gelatin thoracic spine-rib model for use in this training. We sought to create a model that was inexpensive and reusable such that multiple participants could use one model during training. Design: The model was prepared by embedding a firm foam thoracic spine replica with bilateral attached ribs into an opaque gelatin mixture. Once solidified, a preselected area was excised on each side, such that the model could be easily refilled with new gelatin blocks for use by each participant. This allowed for multiple participants to use the same model while eliminating confusion with prior tract marks. Setting: The Marcia and Eugene Applebaum Simulation Learning Institute, Beaumont Hospital, Royal Oak, MI; a private nonprofit tertiary care hospital associated with the OUWB School of Medicine, Rochester, MI. Participants Fifty-two medical students and general surgery residents underwent a 30-minute didactic session on ultrasound technique for catheter placement followed by practice on the gelatin model. Results: The texture and echogenicity of the model were subjectively comparable to those of tissue in vivo and the osseous elements of the spine in the model were clearly identified using ultrasound. The exchangeable catheter placement area provided an efficient and effective method to test accurate performance in catheter placement by multiple users. Participants increased their confidence in the use of ultrasound for this procedure. Conclusions: To date, this is the first gelatin thoracic spine-rib model that has been used to teach ultrasound-guided catheter insertion into the paravertebral space, with removable testing areas that can be used by multiple users. This model can provide an inexpensive training tool that can be used in a surgical simulation setting.

Sexton RE, Hachem AH, Assi AA, **Bukhsh MA**, Gorski DH and Speyer CL (2018). "Metabotropic glutamate receptor-1 regulates inflammation in triple negative breast cancer." *Scientific Reports* 8(1): 16008-16008.

[Full Text](#)

OUWB Medical Student Author

Breast cancer remains a major cause of death among women. 15% of these cancers are triple negative breast cancer (TNBC), an aggressive subtype of breast cancer for which no current effective targeted therapy exists.

We have previously demonstrated a role for mGluR1 in mediating tumor cell growth, endothelial cell proliferation, and tumor-induced angiogenesis in TNBC. In this study, we explore a role for mGluR1 in regulating inflammation in TNBC. GRM1 expression was silenced in MDA-MB-231 cells to study changes in expression of inflammatory genes regulated by mGluR1. Results were confirmed by ELISA using GRM1-silenced and overexpressed cells and mGluR1 inhibitors. A functional role for these differentially expressed genes was determined in vitro and in vivo. 131 genes were differentially expressed in GRM1-silenced MDA-MB-231 cells, with some of these falling into four major canonical pathways associated with acute inflammation, specifically leukocyte migration/chemotaxis. Upregulation of three of these genes (CXCL1, IL6, IL8) and their corresponding protein was confirmed by qPCR analysis and ELISA in GRM1-manipulated TNBC cells. Upregulation of these cytokines enhanced endothelial adhesion and transmigration of neutrophils in co-culture assays and in 4T1 mouse tumors. Our results suggest mGluR1 may serve as a novel endogenous regulator of inflammation in TNBC.

Seymour Z and Hamstra D (2018). "Quality of life is not compromised with intensification of androgen therapy in recurrent prostate cancer." [The Lancet Oncology](#) 19(10): 1275-1276.

[Full Text](#)

Department of Radiation Oncology

Shinthia N, **Burla M** and **Berger D** (2018). "Resuscitation resident impact on patients with severe sepsis and septic shock." [Annals of Emergency Medicine](#) 72(4): S138-S139.

Department of Emergency Medicine

[Full Text](#)

Shotkin P, **Hang B**, **Brackney A**, **Joseph S**, Karabon P, Nnanabu I, Mohammad A and **Bahl A** (2018). "A comparison of ultrasound-guided vascular access catheter survival between standard long intravenous lines and extended dwell catheters." [Annals of Emergency Medicine](#) 72(4): S71-S71.

Department of Emergency Medicine

[Full Text](#)

Siddiqui ZA, Vu CC, Thompson A, **Dilworth JT** and **Chen PY** (2018). "Historical trends of implantable accelerated partial breast irradiation usage after breast conserving surgery for stage I breast cancer: A SEER analysis." [International Journal of Radiation Oncology Biology Physics](#) 102(3): E593-E594.

Department of Radiation Oncology

[Full Text](#)

Silbergleit AK, Cook D, Kienzle S, Boettcher E, Myers D, Collins D, Peterson E, Silbergleit MA and **Silbergleit R** (2018). "Impact of formal training on agreement of videofluoroscopic swallowing study interpretation across and within disciplines." [Abdominal Radiology](#) 43(11): 2938-2944.

[Full Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Formal agreement studies on interpretation of the videofluoroscopic swallowing study (VFSS) procedure among speech-language pathologists, radiology house officers, and staff radiologists have not been pursued. Each of these professions participates in the procedure, interprets the examination, and writes separate reports on the findings. The aim of this study was to determine reliability of interpretation between and within the disciplines and to determine if structured training improved reliability.

Siljander M, Koueiter DM, Gandhi S, **Wiater BP** and **Wiater PJ** (2018). "Outcomes following low-profile mesh plate osteosynthesis of patella fractures." [Journal of Knee Surgery](#) 31(9): 919-926.

Department of Orthopedic Surgery

Treatment of patella fractures is fraught with complications and historically poor functional outcomes. A fixation method that allows for early mobilization and decreases symptomatic hardware rates will improve knee range of motion, postoperative functional status, and reoperation rates. The purpose of this study was to evaluate the functional outcomes after locked plate osteosynthesis of patella fractures at a Level 1 trauma center. A retrospective case series was conducted of patients who underwent open reduction internal

fixation (ORIF) of a patella fracture using a locked mesh plating technique coupled with neutralization of forces on the distal pole of the patella. Twelve patients were evaluated at a mean follow-up of 19 months (range, 6-30) with physical exam, functional outcomes, and radiographs. There were 9 women and 3 men with an average age of 66.1 years (range, 53-75). Radiographic bony union was achieved in all patients by 3-month follow-up. Visual Analog Pain Score averaged 1.7 (median, 1.0; range, 0-8), the mean Knee Outcome Score - Activities of Daily Living Scale was 83.9 (median, 92.1; range, 45.7-100.0), the mean Short Form Musculoskeletal Function Assessment (SMFA) Function Index was 9.9 (median, 3.7; range, 0.7-41.2), and the mean SMFA Bother Index was 11.1 (median, 3.1; range, 0-62.5). The SF-36 Physical Component Score mean was 48.4 +/- 8.5 and the SF-36 Mental Component Score mean was 54.1 +/- 9.6. No complications developed and there were no reoperations for nonunion, infection, or symptomatic hardware. This study demonstrates that locked plate osteosynthesis for operative patella fractures can reliably achieve bony union with potentially superior functional outcomes as compared with traditional methods. Further studies are needed to evaluate plate fixation for patella fractures, but early results are promising.

Siljander MP, **McQuivey KS**, Fahs AM, **Galasso LA**, **Serdahely KJ** and **Karadsheh MS** (2018). "Current trends in patient-reported outcome measures in total joint arthroplasty: A study of 4 major orthopaedic journals." [The Journal of Arthroplasty](#) 33(11): 3416-3421.

[Full Text](#)

OUWB Medical Student Author

Department of Orthopedic Surgery

Background: More emphasis is being placed on patient-reported outcome measures (PROMs), but the myriad of PROMs makes standardization and cross-study comparison difficult. As the era of big data and massive total joint registries matures, it will be critical to identify and implement the best PROMs. Methods: All abstracts published in the years 2004, 2009, 2014, and 2016 in the Journal of Bone and Joint Surgery—American volume, the Bone and Joint Journal, Clinical Orthopedics and Related Research, and the Journal of Arthroplasty were reviewed. A PubMed search was performed with filters limiting results only to total knee, total hip, and unicompartmental knee arthroplasty articles with available abstracts. Each abstract was reviewed to identify all PROMs. Trends over time were evaluated using the Cochran-Armitage test. In the non-trend analysis, Pearson chi-square tests and one-way analysis of variance were performed. Results: A total of 42 unique PROMs were used 1073 times across 644 studies. The number of PROMs in these 4 journals increased from 97 in 2004 to 228 in 2016 ($P < .0001$). The proportion of articles with more than one PROM increased from 20.6% in 2004 to 47.8% in 2016 ($P = .0001$). The most common PROMs used in total knee, total hip, and unicompartmental knee arthroplasty studies were the Knee Society Score, the Harris Hip Score, and the Oxford Knee Score, respectively. Conclusion: Providers and registries should consider the relative prevalence of published outcome measures when selecting which PROMs to use, to better facilitate future cross-study comparison.

Sobh AH, **Brown L** and **Moore DD** (2018). "Intramuscular hemangioma after total hip arthroplasty: an iatrogenic etiology." [Arthroplasty today](#) 4(4): 417-420.

[Full Text](#)

Department of Orthopedic Surgery

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

Spann J, Ye H, Marvin K, **Jawad MS**, **Chen PY**, **Gustafson GS** and **Dilworth JT** (2018). "The impact of chemotherapy on toxicity and cosmetic outcome in patients receiving hypofractionated whole breast irradiation." [International Journal of Radiation Oncology*Biophysics*Physics](#) 102(3, Supplement): e613-e614.

[Full Text](#)

OUWB Medical Student Author

Department of Radiation Oncology

Stewart MT, **Haines DE**, Verma A, Kirchhof N, Barka N, Grassl E and Howard B (2018). "Intracardiac pulsed field ablation: Proof of feasibility in a chronic porcine model." [Heart Rhythm](#). ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine

Background: Radiofrequency (RF) has become an accepted energy source for myocardial ablation but may result in discontinuous lesions and nontargeted tissue injury. We examined the feasibility and safety of lesion formation using high-amplitude, bipolar pulsed electric fields delivered from a multielectrode array catheter. Objective: The purpose of this study was to compare duty-cycled radiofrequency ablation (RFA) to pulsed field ablation (PFA) in terms of acute electrical effects, 2-week lesion formation, and injury to nontargeted tissues. Methods: Intracardiac ablations were performed in 6 pigs using a circular pulmonary vein ablation catheter. The energy source for ablation delivery was randomized to deliver either PFA or RFA to 3 atrial endocardial sites. Bipolar pace capture and electrogram amplitude measurements were recorded at each site. Histopathology and necropsies were performed after 2 weeks. Results: The circular pulmonary vein ablation catheter was used to deliver pulsed electric fields to produce cardiac lesions without skeletal muscle stimulation. Evaluating all ablations in each site, electrogram amplitudes were reduced to <0.5 mV in 67.5% of PFA vs 27.0% of RFA deliveries (P <.001). Bipolar cardiac capture was lost after 100% vs 92.0% of PFA vs RFA (P = .005). At 2 weeks, PFA resulted in consistent transmural and homogeneous replacement fibrosis devoid of lingering myocyte "sequesters." RFA lesions showed a stronger inflammatory response extending to the epicardial fat, arterial injury, and thrombosis. Neither PFA nor RFA lesions showed endocardial thrombus. Conclusion: Intracardiac PFA can be feasibly delivered from a circular catheter to create fibrotic lesions that have acute electrical effects, without injury to nontargeted tissue.

Storey PP, Tauqeer Z, Yonekawa Y, Todorich B, **Wolfe JD**, Shah SP, Shah AR, Koto T, Abbey AM, Morizane Y, Sharma P, Wood EH, Morizane-Hosokawa M, Pendri P, Pancholy M, Harkey S, Jeng-Miller KW, Obeid A, Borkar DS, Chen E, Williams P, Okada AA, Inoue M, Shiraga F, Hirakata A, Shah CP, Prenner J and Garg S (2018). "The impact of prefilled syringes on endophthalmitis following intravitreal injection of ranibizumab." [American Journal of Ophthalmology](#) 199(March): 200-208.

[Full Text](#)

Department of Ophthalmology

Purpose: To compare the rates of infectious endophthalmitis following intravitreal injection of ranibizumab using prefilled syringes vs. conventional preparation. Design: Multicenter, retrospective, cohort study. Methods: All eyes receiving intravitreal injection of 0.5 mg ranibizumab for retinal vascular diseases at ten retina practices across the United States (2016 to 2017) and Japan (2009 to 2017) were included. The total number of eyes and injections were determined from billing codes. Endophthalmitis cases were determined from billing records and evaluated with chart review. Primary outcome was the rate of post-injection acute endophthalmitis. Secondary outcomes were visual acuity and microbial spectrum. Results: A total of 243,754 intravitreal 0.5 mg ranibizumab injections (165,347 conventional and 78,407 prefilled) were administered to 43,132 unique patients during the study period. In the conventional ranibizumab group, a total of 43 cases of suspected endophthalmitis occurred (0.026%; 1 in 3,845 injections) and 22 cases of culture-positive endophthalmitis occurred (0.013%; 1 in 7,516 injections). In the prefilled ranibizumab group, 12 cases of suspected endophthalmitis occurred (0.015%; 1 in 6,534 injections) and 2 cases of culture-positive endophthalmitis occurred (0.0026%; 1 in 39,204 injections). Prefilled syringes were associated with a trend towards decreased risk of suspected endophthalmitis (odds ratio 0.59; 95% confidence interval 0.31 – 1.12; p=0.10) and a statistically significant decreased risk of culture-positive endophthalmitis (odds ratio 0.19; 95% confidence interval 0.045 – 0.82; p=0.025). Average logMAR vision loss at final follow-up was significantly worse for eyes that developed endophthalmitis from the conventional ranibizumab preparation compared to the prefilled syringe group (4.45 lines lost from baseline acuity vs. 0.38 lines lost; p=0.0062). Oral-associated flora was found in 27.3% (6/22) of conventional ranibizumab culture-positive endophthalmitis cases (3 cases of *Streptococcus viridans*, 3 cases of *Enterococcus faecalis*) compared to 0 cases in the prefilled ranibizumab group. Conclusion: In a large, multicenter, retrospective study the use of prefilled syringes during intravitreal injection of ranibizumab was associated with a reduced rate of culture-positive endophthalmitis, including from oral flora, as well as with improved visual acuity outcomes.

Sugihara EM, Evans MA, Neumann M and **Babu SC** (2018). "The effect of intratympanic steroid injection frequency in idiopathic sudden sensorineural hearing loss." [American Journal of Otolaryngology](#) 39(6): 688-692.

[Full Text](#)

Department of Surgery

Purpose: To evaluate the effect of intratympanic steroid injection frequency on hearing outcomes for patients with idiopathic sudden sensorineural hearing loss. Materials and Methods: A retrospective chart review was performed from 2007 to 2015 at a neurotology tertiary referral center. Adults who met academy criteria for idiopathic sudden sensorineural hearing loss within two months of onset and negative imaging were grouped based on injection frequency. Injection schedules were every 1–4 (group 1), 5–10 (group 2), or 11–30 (group 3) days. All patients had at least two injections with Dexamethasone 10mg/ml. All patients had pre- and post-injection audiograms. Results: Seventy patients met inclusion criteria (group 1, n = 21; group 2, n = 29; group 3, n = 20). There was no significant difference between group demographics or baseline audiometric data. Mean gains were significant and similar between groups for pure tone average (group 1 = -23.6 ± 22.0 dB; group 2 = -19.7 ± 18.4 dB; group 3 = -24.9 ± 24.7 dB; $p = 0.67$) and word recognition score (group 1 = $+26.3 \pm 34.8\%$; group 2 = $+23.3 \pm 29.9\%$; group 3 = $+33.4 \pm 28.9\%$; $p = 0.53$). Conclusions: Frequency of intratympanic steroid injections does not significantly affect hearing outcomes. Following injection therapy, hearing outcomes improved regardless of prior or concomitant oral steroid regimen. Earlier time to initiating injections yielded a higher rate of hearing improvement. Long term hearing outcomes >6 months did not show significant additional improvement.

Sura K, Galoforo S, Buelow K, Dabjan M, **Grills IS** and **Wilson GD** (2018). "IL-6 receptor antibody preferentially affects tumors in the repopulation phase of growth." [International Journal of Radiation Oncology Biology Physics](#) 102(3): E187-E187.

Department of Radiation Oncology

[Full Text](#)

Sura K, Ye H, Vu CC, **Robertson JM** and **Kabolizadeh P** (2018). "How many lymph nodes are enough?-defining the extent of lymph node dissection in stage I-III gastric cancer using the National Cancer Database." [Journal of Gastrointestinal Oncology](#) 9(6): 1168-1175.

[Full Text](#)

Department of Radiation Oncology

Background: Surgical resection with lymph node dissection is the primary therapeutic modality for gastric cancer. National Cancer Database (NCDB) was used to determine the extent of lymph nodes (LNs) dissection for gastric cancer. Methods: The NCDB was queried from 2004-2013 for patients with margin-negative, invasive resected gastric cancer. The optimal number of LNs dissected was determined using a univariate χ^2 cut-point analysis. Multiple sensitivity analyses were utilized to decrease bias. Results: A total of 17,851 patients were included. For all patients, the optimal number of LNs needed to be examined was 20+ nodes. When correcting for stage migration (<7 LNs removed), the optimal cut-off value was 20+ LNs. When stratifying by pathologic nodal stage, the cut-off point was 10+ LNs for pN1 and pN2. The 5-year survival was $30.6\% \pm 1.6\%$ for 0-9 removed LNs compared to $48.2\% \pm 1.2\%$ for 10+ removed LNs ($P < 0.001$) in pN1 disease and $18.3\% \pm 1.7\%$ for 0-9 removed LNs compared to $32.6\% \pm 1.2\%$ for 10+ removed LNs ($P < 0.001$) in pN2 disease. For pN3 disease, the optimal cut-off point was 20+ LNs; the 5-year survival was $17.2\% \pm 1.3\%$ for 0-19 removed LNs compared to $28.5\% \pm 1.7\%$ for 20+ removed LNs ($P < 0.001$). Moreover, the outcome was inferior among patients who had >10% positive dissected LNs ($P < 0.05$). Conclusions: The extent of dissected lymph nodes of 20 or greater lymph nodes was associated with superior survival. Extended LN dissection is to be considered especially in patients with clinical lymphadenopathy.

Tantisattamo E, Vutthikraivit P, Mopuru H, Pullalarevu R and Ratanasrimetha P (2018). "New diagnostic criteria for hypertension and renal allograft function." [Journal of Hypertension](#) 36: E230-E231.

[Full Text](#)

Department of Internal Medicine

Thapar K, **Patel N**, Gbadamosi B, Ezekwudo DE, **Jaiyesimi I** and **Smith M** (2018). "Do current antiphospholipid

antibody syndrome guidelines effectively target at-risk obstetric patients?" [Blood](#) 132: 2.

OUWB Medical Student Author

Department of Internal Medicine

Department of Pathology

Thompson A, Myziuk NK, Castillo E, **Grills IS** and **Guerrero TM** (2018). "4D CT ventilation predicts for changes in pulmonary perfusion after radiation treatment for lung cancer." [International Journal of Radiation Oncology Biology Physics](#) 102(3): E710-E710.

Department of Radiation Oncology

[Full Text](#)

Thompson A, Quinn TJ, Thibodeau BJ, Douglas J, **Peeples C**, Cousineau C, **Wasvary H**, **Robertson J** and **Wilson GD** (2018). "Genomic analysis to predict response to neoadjuvant chemoradiation therapy in rectal cancer." [International Journal of Radiation Oncology Biology Physics](#) 102(3): E174-E174.

Department of Radiation Oncology

Department of Surgery

[Full Text](#)

Thottam PJ, Georg M, Simons JP, Kashiwazaki R and Mehta DK (2018). "Structured care to improve outcomes in primary single stage laryngotracheal reconstruction." [International Journal of Pediatric Otorhinolaryngology](#) 114: 71-75.

[Full Text](#)

Department of Surgery

Purpose: To examine single stage laryngotracheal reconstruction (SSLTR) care to reduce complication and failure rate. Methods: Forty-five patients that underwent primary SSLTR were examined retrospectively. All had pre-operative direct laryngoscopy and bronchoscopy, esophagoscopy with biopsy and MRSA screening. Pre-operative subglottic stenosis (SGS) grade and associated comorbidities were recorded. Intraoperative graft location and type was documented. Hospital course and results were evaluated and compared to cited literature. Results: The median age at reconstruction was 2 years (0–15 years). 42.2% were male. 66.7% had gastroesophageal disease and 24.4% a MRSA history. Grade 2 SGS was noted pre-operatively in 37.8% and grade 3 or 4 in 57.7% of patients. Post-surgical hospital course was examined. 77.8% of patients were extubated on planned date. 95.6% of patients had operation specific successful decannulation. Graft type and variations of graft placement as well as MRSA and GERD status didn't affect procedure success rate. Active GERD was related to failure of extubation on planned day ($p = 0.02$). An abnormal pre-operative swallowing examination was associated with higher complication rates ($p = 0.03$). Conclusion: Utilizing a more structured approach to SSLTR work-up and addressing potential SSLTR pitfalls may result in higher operation specific decannulation rates. Pre-operative GERD and swallowing dysfunction were associated with higher rates of adverse events.

Trese MGJ, Lai Z and **Gupta C** (2018). "Isolated conjunctival lymphangioma." [Ophthalmology](#) 125(10): 1507.

[Full Text](#)

Department of Emergency Medicine

Trese MGJ, Price JM and **Bohra L** (2018). "Lipemia retinalis as the presenting sign of undiagnosed type 1 diabetes mellitus resulting in severe secondary hypertriglyceridemia." [Journal of American Association for Pediatric Ophthalmology and Strabismus](#) 22(5): 405-407.

[Full Text](#)

Department of Ophthalmology

We describe the clinical course of an 11-year-old girl diagnosed with lipemia retinalis as the presenting sign of diabetes mellitus type 1 with severe secondary hypertriglyceridemia. By performing serial multimodal imaging studies, we provide a comprehensive description of the clinical manifestations associated with severe hypertriglyceridemia to promote recognition of this rare clinical diagnosis.

Truong QA, Rinehart S, Abbara S, Achenbach S, Berman DS, Bullock-Palmer R, Carrascosa P, **Chinnaiyan KM**, Dey D,

Ferencik M, Fuechtner G, Hecht H, Jacobs JE, Lee S-E, Leipsic J, Lin F, Meave A, Pugliese F, Sierra-Galán LM, Williams MC, Villines TC and Shaw LJ (2018). "Coronary computed tomographic imaging in women: An expert consensus statement from the Society of Cardiovascular Computed Tomography." [Journal of Cardiovascular Computed Tomography](#) 12(6): 451-466.

[Full Text](#)

Department of Internal Medicine

This expert consensus statement from the Society of Cardiovascular Computed Tomography (SCCT) provides an evidence synthesis on the use of computed tomography (CT) imaging for diagnosis and risk stratification of coronary artery disease in women. From large patient and population cohorts of asymptomatic women, detection of any coronary artery calcium that identifies females with a 10-year atherosclerotic cardiovascular disease risk of >7.5% may more effectively triage women who may benefit from pharmacologic therapy. In addition to accurate detection of obstructive coronary artery disease (CAD), CT angiography (CTA) identifies nonobstructive atherosclerotic plaque extent and composition which is otherwise not detected by alternative stress testing modalities. Moreover, CTA has superior risk stratification when compared to stress testing in symptomatic women with stable chest pain (or equivalent) symptoms. For the evaluation of symptomatic women both in the emergency department and the outpatient setting, there is abundant evidence from large observational registries and multi-center randomized trials, that CT imaging is an effective procedure. Although radiation doses are far less for CT when compared to nuclear imaging, radiation dose reduction strategies should be applied in all women undergoing CT imaging. Effective and appropriate use of CT imaging can provide the means for improved detection of at-risk women and thereby focus preventive management resulting in long-term risk reduction and improved clinical outcomes.

Tutolo M, Ammirati E, Heesakkers J, Kessler TM, **Peters KM**, Rashid T, Sievert KD, Spinelli M, Novara G, Van der Aa F and De Ridder D (2018). "Re: Efficacy and safety of sacral and percutaneous tibial neuromodulation in non-neurogenic lower urinary tract dysfunction and chronic pelvic pain: A systematic review of the literature editorial comment." [Journal of Urology](#) 200(5): 949-950.

Department of Urology

Uhlig PN, Doll J, Brandon K, Goodman C, Medado-Ramirez J, **Barnes MA**, Dolansky MA, Ratcliffe TA, Kornswad K, Raboin WE, Hitzeman M, Brown J and Hall L (2018). "Interprofessional practice and education in clinical learning environments: Frontlines perspective." [Academic Medicine](#) 93(10): 1441-1444.

[Full Text](#)

Department of Internal Medicine

This Invited Commentary is written by coauthors working to implement and study new models of interprofessional practice and education in clinical learning environments. There are many definitions and models of collaborative care, but the essential element is a spirit of collaboration and shared learning among health professionals, patients, and family members. This work is challenging, yet the benefits are striking. Patients and family members feel seen, heard, and understood. Health care professionals are able to contribute and feel appreciated in satisfying ways. Learners feel included. Care interactions are richer and less hierarchical, and human dimensions are more central. A crucial insight is that collaborative care requires psychological safety, so that people feel safe to speak up, ask questions, and make suggestions. The most important transformation is actively engaging patients and families as true partners in care creation. A leveling occurs between patients, family members, and health professionals, resulting from closer connections, deeper understandings, and greater mutual appreciation. Leadership happens at all levels in collaborative care, requiring team-level capabilities that can be learned and modeled, including patience, curiosity, and sharing power. These abilities grow as teams work and learn together, and can be intentionally advanced by reconfiguring organizational structures and care routines to support collective team reflection. Collaborative care requires awareness and deliberate practice both individually and as a team together. Respectful work is required, and setbacks should be considered normal at first. Once people have experienced the benefits of collaborative care, most "never want to go back."

Vinogradskiy Y, Rusthoven CG, Schubert L, Jones B, Faught A, Castillo R, Castillo E, Gaspar LE, Kwak J, Waxweiler T, Dougherty M, Gao D, **Stevens C**, Miften M, Kavanagh B, **Guerrero T** and **Grills I** (2018). "Interim analysis of a two-institution, prospective clinical trial of 4DCT-ventilation-based functional avoidance radiation therapy."

[International Journal of Radiation Oncology*Biology*Physics 102\(4\): 1357-1365.](#)

[Full Text](#)

Department of Radiation Oncology

Purpose: Functional imaging has been proposed that uses 4DCT images to calculate 4DCT-based lung ventilation (4DCT-ventilation). We have started a 2-institution, phase 2 prospective trial evaluating the feasibility, safety, and preliminary efficacy of 4DCT-ventilation functional avoidance. The trial hypothesis is that the rate of grade ≥ 2 radiation pneumonitis could be reduced to 12% with functional avoidance, compared with a 25% rate of pneumonitis with a historical control. The trial employed a Simon 2-stage design with a planned futility analysis after 17 evaluable patients. The purpose of this work is to present the trial design and implementation, dosimetric data, and clinical results for the planned futility analysis. **Methods and Materials:** Eligible patients were patients with lung cancer who were prescribed doses of 45 to 75 Gy. For each patient, the 4DCT data were used to generate a 4DCT-ventilation image using the Hounsfield unit technique along with a compressible flow-based image registration algorithm. Two intensity modulated radiation therapy treatment plans were generated: (1) a standard lung plan and (2) a functional avoidance treatment plan that aimed to reduce dose to functional lung while meeting target and normal tissue constraints. Patients were treated with the functional avoidance plan and evaluated for thoracic toxicity (presented as rate and 95% confidence intervals [CI]) with a 1-year follow-up. **Results:** The V20 to functional lung was $21.6\% \pm 9.5\%$ (mean \pm standard deviation) with functional avoidance, representing a decrease of 3.2% ($P < .01$) relative to standard, nonfunctional treatment plans. The rates of grade ≥ 2 and grade ≥ 3 radiation pneumonitis were 17.6% (95% CI, 3.8%–43.4%) and 5.9% (95% CI, 0.1%–28.7%), respectively. **Conclusions:** Dosimetrically, functional avoidance achieved reduction in doses to functional lung while meeting target and organ at risk constraints. On the basis of Simon's 2-stage design and the 17.6% grade ≥ 2 pneumonitis rate, the trial met its futility criteria and has continued accrual.

Vu CC, Blas KG, **Lanni TB, Gustafson GS** and **Krauss DJ** (2018). "Cost-effectiveness of prostate boost with high-dose-rate brachytherapy versus intensity-modulated radiation therapy in the treatment of intermediate-high risk prostate cancer." [Brachytherapy 17\(6\): 852-857.](#)

[Full Text](#)

Department of Radiation Oncology

Purpose: The recently published ASCENDE-RT randomized clinical trial demonstrated improved biochemical control, albeit with increased toxicity, for a prostate boost with brachytherapy versus external beam radiation therapy alone in patients with intermediate-high risk prostate cancer. In this study, we investigated the cost-effectiveness of these two modalities in the treatment of intermediate-high risk prostate cancer. **Methods and Materials:** A multistate Markov model was created to model a patient with intermediate-high risk prostate cancer. The two treatment options modeled were (1) 23 fractions of intensity-modulated radiation therapy (IMRT) and two fractions of high-dose-rate prostate brachytherapy (brachytherapy boost) and (2) 44 fractions of IMRT (IMRT alone). Each patient received 1 year of hormone therapy, per the ASCENDE-RT protocol. Model assumptions, including clinical outcomes, toxicity, and utilities were derived from the medical literature. Costs of radiation therapy were estimated using Medicare reimbursement data. **Results:** The estimated expected lifetime cost of brachytherapy boost was \$68,696, compared to \$114,944 for IMRT alone. Brachytherapy boost significantly lowered expected lifetime treatment costs because it decreased the incidence of metastatic castration-resistant prostate cancer, cutting the use of expensive targeted therapy for metastatic castration-resistant prostate cancer. Brachytherapy boost had an expected quality-adjusted life years of 10.8 years, compared to 9.3 years for IMRT alone. One-way sensitivity analyses of our results found brachytherapy boost to be cost-effective over a wide range of cost, utility, and cancer progression rate assumptions. **Conclusions:** IMRT with high-dose-rate brachytherapy boost is a cost-effective treatment for intermediate-high risk prostate cancer compared to IMRT alone.

Vu CC, Zamdborg L, Siddiqui ZA, **Gustafson GS, Krauss DJ** and **Guerrero TM** (2018). "Automatic segmentation using convolutional neural networks in prostate cancer." [International Journal of Radiation Oncology Biology Physics 102\(3\): S61-S61.](#)

Department of Radiation Oncology

[Full Text](#)

Wang WGA, **Chen PY**, Ye H, **Yan D**, Hauck CR, Chen S, Johnson M and **Krauss DJ** (2018). "Long term outcomes of a positron emission tomography (PET) -based adaptive radiation therapy protocol in locally advanced head and neck cancer." *International Journal of Radiation Oncology Biology Physics* 102(3): S111-S111.

Department of Radiation Oncology

[Full Text](#)

Wang X, Zamdborg L, Ye H, **Grills IS** and **Yan D** (2018). "A matched-pair analysis of stereotactic body radiotherapy (SBRT) for oligometastatic lung tumors from colorectal cancer versus early stage non-small cell lung cancer." *BMC Cancer* 18(1): 962.

[Full Text](#)

Department of Radiation Oncology

The use of stereotactic body radiotherapy (SBRT) for early-stage primary non-small cell lung cancer (NSCLC) reported excellent local control rates. But the optimal SBRT dose for oligometastatic lung tumors (OLTs) from colorectal cancer (CRC) has not yet been determined. This study aimed to evaluate whether SBRT to a dose of 48–60 Gy in 4–5 fractions could result in similar local outcomes for OLTs from CRC as compared to early-stage NSCLC, and to examine potential dose-response relationships for OLTs from CRC.

Wegner KA, Abler LL, Oakes SR, Mehta GS, Ritter KE, Hill WG, Zwaans BM, **Lamb LE**, Wang Z, Bjorling DE, Ricke WA, Macoska J, Marker PC, Southard-Smith EM, Eliceiri KW and Vezina CM (2018). "Void spot assay procedural optimization and software for rapid and objective quantification of rodent voiding function, including overlapping urine spots." *American Journal of Physiology-Renal Physiology* 315(4): F1067-F1080.

[Full Text](#)

Department of Urology

Mouse urinary behavior is quantifiable and is used to pinpoint mechanisms of voiding dysfunction and evaluate potential human therapies. Approaches to evaluate mouse urinary function vary widely among laboratories, however, complicating cross-study comparisons. Here, we describe development and multi-institutional validation of a new tool for objective, consistent, and rapid analysis of mouse void spot assay (VSA) data. Void Whizzard is a freely available software plugin for FIJI (a distribution of ImageJ) that facilitates VSA image batch processing and data extraction. We describe its features, demonstrate them by evaluating how specific VSA method parameters influence voiding behavior, and establish Void Whizzard as an expedited method for VSA analysis. This study includes control and obese diabetic mice as models of urinary dysfunction to increase rigor and ensure relevance across distinct voiding patterns. In particular, we show that Void Whizzard is an effective tool for quantifying nonconcentric overlapping void spots, which commonly confound analyses. We also show that mouse genetics are consistently more influential than assay design parameters when it comes to VSA outcomes. None of the following procedural modifications to reduce overlapping spots masked these genetic-related differences: reduction of VSA testing duration, water access during the assay period, placement of a wire mesh cage bottom on top of or elevated over the filter paper, treatment of mesh with a hydrophobic spray, and size of wire mesh opening. The Void Whizzard software and rigorous validation of VSA methodological parameters described here advance the goal of standardizing mouse urinary phenotyping for comprehensive urinary phenome analyses.

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): 7.

[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.

Wilkinson JB, **Chen PY**, Wallace MF, Shah CS, Benitez PR, Martinez AA and Vicini FA (2018). "Six-Year results from a phase I/II trial for hypofractionated accelerated partial breast irradiation using a 2-day dose schedule." [American Journal of Clinical Oncology](#) 41(10): 986-991.

[Full Text](#)

Department of Radiation Oncology

Background: To report 6-year outcomes from a phase I/II trial using balloon-based brachytherapy to deliver APBI in 2 days. Methods: A total of 45 patients with early-stage breast cancer received adjuvant APBI in 2 days with high-dose rate (HDR) brachytherapy totaling 2800 cGy in 4 fractions (700 cGy BID) using a balloon-based applicator as part of a prospective phase I/II clinical trial. All patients had negative margins and skin spacing ≥ 8 mm. We evaluated toxicities (CTCAE v3) as well as ipsilateral breast tumor recurrence (IBTR), regional nodal failure (RNF), distant metastasis, disease-free survival, cause-specific survival, and overall survival. Results: Median age and tumor size were 66 years old (48 to 83) and 0.8 cm (0.2 to 2.3 cm), respectively. Four percent of patients were N1 (n=2) and 73% were estrogen receptor (ER) positive (n=32). Median follow-up was 6.2 years (2.4 to 8.0 y). Nearly all toxicities at 6 years were grade 1 to 2 except 1 instance of grade 3 telangiectasia (2%). Eleven percent (n=5) of patients had chronic asymptomatic fat necrosis whereas asymptomatic seromas were noted on mammogram in 13% of cases (n=6). Cosmesis at last follow-up was good or excellent in 91% of cases (n=40) and fair in 9% (n=4). Two of the previously reported rib fractures healed with conservative measures. There were no IBTR or RNF (6 y IBTR/RNF rate 0%); however, 2 patients experienced distant metastasis (4% at 6 y). The 6-year actuarial disease-free survival, cause-specific survival, and overall survival were 96%, 100%, and 93%, respectively. Conclusions: Hypofractionated 2-day APBI using brachytherapy resulted in excellent clinical outcomes with acceptable chronic toxicities.

Won K-B, Lee S-E, Lee BK, Park H-B, Heo R, Rizvi A, Lin FY, Kumar A, Hadamitzky M, Kim Y-J, Sung JM, Conte E, Andreini D, Pontone G, Budoff MJ, Gottlieb I, Chun EJ, Cademartiri F, Maffei E, Marques H, Leipsic JA, Shin S, Choi JH, Virmani R, Samady H, **Chinnaiyan K, Raff GL**, Stone PH, Berman DS, Narula J, Shaw LJ, Bax JJ, Min JK and Chang H-J (2018). "Longitudinal assessment of coronary plaque volume change related to glycemic status using serial coronary computed tomography angiography: A PARADIGM (Progression of Atherosclerotic Plaque Determined by Computed Tomographic Angiography Imaging) substudy." [Journal of Cardiovascular Computed Tomography](#). ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine

Background: Data on the impact of glycemic status on coronary plaque progression have been limited. This study evaluated the association between glycemic status and coronary plaque volume change (PVC) using coronary computed tomography angiography (CCTA). Methods: A total of 1296 subjects (61 \pm 9, 56.9% male) who underwent serial CCTA with available glycemic status were enrolled and analyzed from the Progression of Atherosclerotic Plaque Determined by Computed Tomographic Angiography Imaging (PARADIGM) registry. The median inter-scan period was 3.2 (2.6–4.4) years. Quantitative assessment of coronary plaques was performed at both scans. All participants were categorized into the following groups according to glycemic status: normal, pre-diabetes (pre-DM), and diabetes mellitus (DM). Results: During the follow-up, significant differences in PVC (normal: 51.3 \pm 83.3 mm³ vs. pre-DM: 51.0 \pm 84.3 mm³ vs. DM: 72.6 \pm 95.0 mm³; p < 0.001) and annualized PVC (normal: 14.9 \pm 24.9 mm³ vs. pre-DM: 15.7 \pm 23.8 mm³ vs. DM: 21.0 \pm 27.7 mm³; p = 0.001) were observed among the 3 groups. Compared with normal individuals, individuals with pre-DM showed no significant differences in the adjusted odds ratio (OR) for plaque progression (PP) (1.338, 95% confidence interval [CI] 0.967–1.853; p = 0.079). However, the adjusted OR for PP was higher in DM individuals than in normal individuals (1.635, 95% CI 1.126–2.375; p = 0.010). Conclusion: DM had an incremental impact on coronary PP, but pre-DM appeared to have no significant association with an increased risk of coronary PP after adjusting for confounding factors.

Wood EH, Kreymerman A, Sun Y, **Drenser KA** and **Trese MT** (2018). "Considerations for ophthalmic applications of optogenetics." [Acta Ophthalmologica](#) 96(8): e1037-e1037.

[Full Text](#)

Department of Ophthalmology

Wu JC, Lilly R, Vara AD and **Sobol G** (2018). "Posttraumatic bifid ulna in a pediatric Galeazzi-Equivalent forearm fracture." *Journal of Hand Surgery*. ePub Ahead of Print.

[Full Text](#)

Department of Orthopedic Surgery

We report an unusual clinical presentation and surgical treatment of a Galeazzi-equivalent fracture in which initial closed treatment failed. This case was unique and challenging secondary to the formation of a neoulna volar to an unreduced periosteal sleeve injury, resulting in a bifid radiographic appearance.

Wyndaele J-J, Birch B, Borau A, **Burks F**, Castro-Diaz D, Chartier-Kastler E, Drake M, Ishizuka O, Minigawa T, Opisso E, **Peters K**, Padilla-Fernández B, Reus C and Sekido N (2018). "Surgical management of the neurogenic bladder after spinal cord injury." *World Journal of Urology* 36(10): 1569-1576.

[Full Text](#)

Department of Urology

This work represents the efforts of the SIU-ICUD workgroup on this topic and comprehensive literature search of English language manuscripts regarding urologic surgery in spinal cord injury using key words of urologic surgery and spinal cord injury. Articles were compiled, and recommendations in the chapter are based on group discussion and intensive communication. The purpose is to review what has been published during the last decades on urological surgery for neurogenic bladder after spinal cord injury.

Yadav S, **Ladkany R**, Yadav D, Alhalabi O, Khaddam S, Isaac D, Cardenas PY and **Zakalik D** (2018). "Impact of BRCA mutation status on survival of women with triple-negative breast cancer." *Clinical Breast Cancer* 18(5): e1229-e1235.

[Full Text](#)

Department of Internal Medicine

Introduction: The effect of germline BRCA mutations on the outcomes of patients with triple-negative breast cancer (TNBC) is not well understood. Materials and Methods: The present retrospective study included women with newly diagnosed TNBC from January 1, 2004 to December 30, 2013. The demographic and tumor characteristics, genetic testing results, and outcomes were collected by a review of the patients' medical records. The outcomes were compared between the BRCA+ and BRCA- women. Kaplan-Meier curves were plotted for survival analysis, and Cox proportional hazard regression was used to determine the predictors of recurrence-free survival. Results: A total of 266 TNBC patients who had undergone BRCA testing were included in the final analysis. Of the 266 patients, 72 (27.0%) tested positive for a pathogenic BRCA mutation and 194 (73.0%) tested negative. BRCA+ women were more likely to be diagnosed with breast cancer at a younger age than were the BRCA- women. Mutation carriers were also more likely to undergo bilateral mastectomy and less likely to receive radiation. The 2- and 5-year overall survival in BRCA+ women was 97.1% and 83.1% and was 97.3% and 89.7% in the BRCA- women, respectively. No statistically significant difference was found in overall survival between the BRCA+ and BRCA- group. No statistically significant difference was noted in the rate of locoregional recurrence, distant recurrence, or recurrence-free survival between the BRCA+ and BRCA- women. Conclusion: Our study has demonstrated that BRCA mutation carrier status does not affect overall survival or recurrence-free survival in patients with TNBC.

Yang S, Leone DA, Biswas A, Deng A, Jukic D, Singh R, **Sundram U** and Mahalingam M (2018). "Concordance of somatic mutation profiles (BRAF, NRAS, and TERT) and tumoral PD-L1 in matched primary cutaneous and metastatic melanoma samples." *Human Pathology* 82: 206-214.

[Full Text](#)

Department of Pathology

Summary: Despite the efficacy of BRAF-targeted and PD-L1-related immune therapies in tackling metastatic melanoma, a significant number of patients exhibit resistance. Given this, the objective of the current study was to ascertain concordance of somatic mutations in BRAF/NRAS/TERT and immunohistochemical PD-L1 and CD8 in matched primary cutaneous and metastatic melanoma. A total of 43 archival paired samples with sufficient material for genetic and immunohistochemical analyses met the criteria for inclusion in the study. Immunohistochemistry was performed for PD-L1 and CD8 and direct-DNA Sanger sequencing for

BRAF/NRAS/TERT promoter mutational analyses. Agreement between paired samples was assessed using Cohen κ . Poor concordance among primary and corresponding metastases was noted in BRAF (9/42 cases discordant, $\kappa = 0.49$; 95% confidence interval [CI], 0.21-0.77; $P = .0013$), TERT promoter mutations (13/41 cases discordant, $\kappa = 0.33$; 95% CI, 0.04-0.62; $P = .033$), tumoral PD-L1 immunoreexpression (9/43 cases discordant, $\kappa = 0.39$; 95% CI, 0.07-0.72; $P = .0099$), and immunoreexpression of CD8+ T lymphocytes (12/43 cases discordant, $\kappa = 0.44$; 95% CI, 0.19-0.69; $P = .002$). Although NRAS1 and NRAS2 were highly concordant (42/43 and 39/43 cases, respectively), discordant NRAS2 mutational status was associated with a median time to metastasis of 90 versus 455 days for pairs with concordant status ($P = .07$). Although limited by sample size, our findings suggest that consideration be given to mutational analysis of metastatic tissue rather than the primary to guide BRAF-targeted therapy and question the roles of TERT promoter mutations and PD-L1 as predictive biomarkers in malignant melanoma.

Ye H, Manders MD, Ducharme E, Macina S, **Chen PY** and **Grills IS** (2018). "Conceptual structure of EORTC QLQ-C30 for brain metastasis patients treated with gamma knife." International Journal of Radiation Oncology Biology Physics 102(3): E744-E744.

Department of Radiation Oncology

[Full Text](#)

Ye H, Rutka E and **Robertson J** (2018). "Determination of the relative importance of different clinical domains on the overall patient satisfaction domain using structural equation modeling." International Journal of Radiation Oncology Biology Physics 102(3): E734-E734.

Department of Radiation Oncology

[Full Text](#)

Yin WQ, **Zhang PL**, **Macknis JK**, Lin F and Bonventre JV (2018). "Kidney injury molecule-1 identifies antemortem injury in postmortem adult and fetal kidney." American Journal of Physiology-Renal Physiology 315(6): F1637-F1643.

[Full Text](#)

Department of Pathology

There is currently no technique to unambiguously diagnose antemortem kidney injury on postmortem examination since postmortem tissue damage and autolysis are common. We assessed the ability to detect kidney injury molecule-1 (KIM-1) expression in adult and fetal kidneys examined at autopsy. In adult kidneys ($n = 52$ subjects), we found that the intensity of KIM-1 staining significantly correlated with the antemortem level of serum creatinine, and this was independent of the extent of tissue autolysis. In addition, kidneys from a total of 52 fetal/neonatal subjects, 30 stillborns and 22 liveborns, were assessed for KIM-1 staining. Given that serum creatinine is unreliable and often unavailable in fetuses and newborns, we assessed preterminal hypoxia in fetuses by the presence of squames in pulmonary alveoli and by required intubation. KIM-1 expression correlated with these clinical indexes of hypoxia. The expression of KIM-1 was seen in a majority of the fetal and neonatal autopsy kidneys (77%, 40/52) as early as 16 wk of gestation, even in the presence of autolysis. Thus KIM-1 is a specific and stable marker of antemortem tubular injury in kidneys of adults and fetuses despite postmortem autolysis.

Yu Z, Quiroz E, Shen Y and **Jaiyesimi IA** (2018). "Pathological complete response induced by neoadjuvant treatment using BRAF and MEK inhibitors in a patient with unresectable BRAF V600E-mutant malignant melanoma of the gallbladder." OncoTargets and Therapy 11: 8723-8728.

[Full Text](#)

Department of Internal Medicine

Historically, patients with locally advanced or metastatic melanoma have an extremely poor prognosis. In recent years, major breakthroughs in cutaneous melanoma treatment have led to remarkable improvements in patient outcomes. However, there are limited published data on the efficacy of these novel therapies in the treatment of mucosal melanoma due to rarity of the disease. We report a case of successful neoadjuvant targeted therapy with BRAF and MEK inhibitors followed by radical surgical excision in a patient with advanced malignant melanoma of the gallbladder.

Yuan JC, Siddiqui ZA, **Krauss DJ**, **Seymour ZA** and **Grills IS** (2018). "Stereotactic radiosurgery as a component of

treatment for brain metastases in small cell lung cancer patients." [International Journal of Radiation Oncology*Biophysics](#) 102(3, Supplement): e379.

[Full Text](#)

OUIWB Medical Student Author

Department of Radiation Oncology

Zillgitt A, Alshammaa A, Kahn MS, Madani S, Zahoor S and Air EL (2018). "Post-operative nonketotic hyperglycemic induced focal motor status epilepticus related to treatment with corticosteroids following standard anterior temporal lobectomy." [Epilepsy & Behavior Case Reports](#) 10: 124-128.

[Full Text](#)

Department of Neurology

Complications from standard ATL are uncommon and the use of post-operative corticosteroids may reduce complications. Following standard ATL, FMSE was present after treatment with corticosteroids that resolved after blood sugar control. After epilepsy surgery, corticosteroids should be used cautiously in people with comorbid diabetes mellitus.

Zwaans BMM, Bartolone SN, **Chancellor MB**, Nicolai HE and **Lamb LE** (2018). "Altered angiogenic growth factors in urine of prostate cancer survivors with radiation history and radiation cystitis." [Urology](#) 120: 180-186.

[Full Text](#)

Department of Urology

Objective: To determine if the vascular damage in bladders of prostate cancer (PCa) survivors with radiation cystitis can be detected through altered angiogenic growth factors in urine. Methods: Urine samples from PCa survivors with a history of external beam radiation therapy were tested for a panel of angiogenic growth factors by Luminex assay. Urine creatinine levels were measured through high performance liquid chromatography. Through a patient survey, data on patient demographics, radiation history, and urinary symptoms were collected. Results: Hepatocyte growth factor (HGF), placental growth factor (PIGF), and vascular endothelial growth factor (VEGF) were altered in urine of PCa survivors with a history of radiation therapy. HGF and PIGF were elevated in response to irradiation, while VEGF had a decreasing trend. Within the irradiated population, HGF was also increased in patients diagnosed with radiation cystitis and patients with hematuria. PIGF and VEGF were only increased in the first year postirradiation, and VEGF was elevated in patients with hematuria. Finally, creatinine levels were increased in PCa survivors with a history of radiation therapy. Conclusion: Radiation cystitis is a debilitating bladder condition that cancer survivors are at risk of developing after pelvic radiation. In this study, we identified 3 pro-angiogenic factors that may be urine biomarkers and, if validated in future studies, could indicate new strategy approaches to treat radiation cystitis.

Zwaans BMM, **Lamb LE**, Bartolone S, Nicolai HE, **Chancellor MB** and Klaudia S-W (2018). "Cancer survivorship issues with radiation and hemorrhagic cystitis in gynecological malignancies." [International Urology and Nephrology](#) 50(10): 1745-1751.

[Full Text](#)

Department of Urology

Given that more cancers are being diagnosed earlier and that treatment of cancer is improving, health issues of cancer survivors are becoming more common and apparent. Pelvic radiation therapy for the treatment of gynecological cancers can lead to long-term collateral damage to the bladder, a condition termed radiation cystitis (RC). Late sequelae may take many years to develop and include incontinence and pain as well as hematuria. RC is a rare but potentially life-threatening condition for which there are few management and treatment options.