

**OAKLAND UNIVERSITY WILLIAM BEAUMONT SCHOOL OF MEDICINE  
PUBLICATION LIST  
April - June 2020**

We compiled this bibliography to recognize the school's scholarly activity and to provide ease of access to the journal articles, published meeting abstracts, book chapters, books, and other works written by OUWB faculty, students and staff. We created the list by searching the institutional affiliation fields in PubMed, Scopus, Web of Science, EMBase, CINAHL, MedEd Portal, Google Scholar and Google Books. Because of search limitations, it does not represent an exhaustive collection of all published works by OUWB authors. If we inadvertently missed your publication, please email the citation to the Medical Library at [medref@oakland.edu](mailto:medref@oakland.edu), and we will add it to the next quarter's list.

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## Articles related to the COVID-19 Pandemic

In the midst of our current pandemic, we thought it worthy to recognize those articles pertaining to COVID-19 and the efforts of our faculty and staff to educate the world on its effects as well as how the virus has affected healthcare practices. Please click on the article title to jump to its relevant citation in the report.

**Mitchell Cappell** - [Moderately severe diarrhea and impaired renal function with COVID-19 infection](#)

**Ananias Diokno** and **Jeffrey Devries** - [The impact of COVID-19 on urologic practice, medical education, and training](#)

**Michael Gallagher**, Richard Bloomingdale, **Aaron Berman**, **Brian Williamson**, **Simon Dixon SR** and **Robert Safian** - [Strategic deployment of cardiology fellows-in-training using the Accreditation Council for Graduate Medical Education COVID-19 framework](#)

Zaid Imam, Fadi Odish, Justin Armstrong, **Heba Elassar**, **Jonathan Dokter**, Emily Langnas, and **Alexandra Halalau** - [Independent correlates of hospitalization in 2040 patients with COVID-19 at a large hospital system in Michigan, United States](#)

Zaid Imam, Fadi Odish, Inayat Gill, Daniel O'Connor, Justin Armstrong, **Aimen Vanood**, **Oluwatoyin Ibrionke**, Angy Hanna, **Alexandra Ranski**, and **Alexandra Halalau** - [Older age and comorbidity are independent mortality predictors in a large cohort of 1305 COVID-19 patients in Michigan, United States](#)

Vishal Jindal, Kamal Kant Sahu, **Susanna Gaikazian** Ahmad Daniyal Siddiqui, and **Ishmael Jaiyesimi** - [Cancer treatment during COVID-19 pandemic](#)

Ankur Kalra, Erin Michos, and **Kavitha Chinnaiyan** - [COVID-19 and the healthcare workers](#)

Ravina Kullar, Jasmine Marcelin, Talia Swartz, Damani Piggott, Raul Macias Gil, **Trini Mathew**, and Tina Tan - [Racial](#)

[disparity of coronavirus disease 2019 \(COVID-19\) in African American communities](#)

Laura Lamb, Sarah Bartolone, Elijah Ward, and **Michael Chancellor** - [Rapid detection of Novel Coronavirus/Severe Acute Respiratory Syndrome Coronavirus 2 \(SARS-CoV-2\) by reverse transcription-loop-mediated isothermal amplification](#)

Amir Pakray, David Walker, Alexander Figacz, **Stephen Kilanowski, Casey Rhodes, Shashin Doshi**, and Mary Coffey - [Imaging evaluation of COVID-19 in the emergency department](#)

Paul Patek, John Corcoran, **Lauren Adams**, and **Paras Khandhar** - [SARS-CoV-2 infection in a 2-week-old male with neutropenia](#)

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**Abbas AE** (2020). "Letter by Abbas regarding articles, "Balloon-expandable versus self-expanding transcatheter aortic valve replacement: A propensity-matched comparison from the FRANCE-TAVI registry" and "Impact of Sapien 3 balloon-expandable versus Evolut R self-expandable transcatheter aortic valve implantation in patients with aortic stenosis: Data from a nationwide analysis"." [Circulation](#) 141(24): e908-e909.

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*Department of Internal Medicine*

**Abbas AE**, Mando R, **Hanzel G**, **Goldstein J**, **Shannon F** and Pibarot P (2020). "Hemodynamic principles of prosthetic aortic valve evaluation in the transcatheter aortic valve replacement era." [Echocardiography](#) 37(5): 738-757.

[Full Text](#)

*Department of Internal Medicine*

*Department of Surgery*

Evaluating the hemodynamic performance of aortic valve prostheses has relied primarily on echocardiography. This involves calculating the trans-prosthetic valve mean gradient (MG) and aortic valve area (AVA), and assessing for valvular and paravalvular regurgitation in a fashion similar to the native aortic valve. In conjunction with other echocardiographic and nonechocardiographic parameters, MG and AVA are used to distinguish between prosthesis stenosis, prosthesis patient mismatch, pressure recovery, increased flow, and measurement errors. This review will discuss the principles and limitations of echocardiographic evaluation of aortic valve prosthesis following surgical, and transcatheter aortic valve replacement and in comparison to invasive hemodynamics through illustrative clinical cases.

**Abbas AE**, Mando R, Ternacle J, Pibarot P, Rodes-Cabau J, Guimaraes L, **Hanzel GS**, Sigua-Arce P, **Safian RD**, **Lau W** and **Shannon F** (2020). "The impact of aortic valve velocity and mean gradient on the incidence and severity of prosthesis patient mismatch following TAVR." [Journal of the American College of Cardiology](#) 75(11): 1489.

[Full Text](#)

*Department of Internal Medicine*

*Department of Anesthesiology*

*Department of Surgery*

Abdel-Magiud EM, Taha EA, Bakr RM, Ismail SA, Sayed SK, Makboul M, **Kamel-ElSayed S** and Abdel Motaleb AA (2020). "Effects of different therapeutic modalities for postacne scars on circulating collagen III." [Journal of Cosmetic Dermatology](#) 19(6): 1517-1521.

[Full Text](#)

*Department of Foundational Medical Studies (OU)*

Background: Therapies for postacne scarring act through modulation of elastin and collagen, and collagen III might therefore represent a biomarker of treatment effectiveness. Patients and Methods: Patients (n = 70) with postacne scars and individuals without scars (n = 56) were included in this case-control study. Patients were treated with Dermaroller microneedling, trichloroacetic acid chemical reconstruction, punch excision, or

scar subcision. Scar severity was graded immediately before and after treatment with a photographic quartile scale and the ECCA scale. Serum levels of collagen III were measured in control individuals and in patients, before treatment, 1 month after the first treatment session, and 4 months after the final session. Results: Circulating levels of collagen III were significantly higher in patients with postacne scarring (24.1 +/- 12.5) before treatment than in control individuals (2.6 +/- 0.8). Circulating levels of collagen in patients were significantly lower 4 months posttreatment (14.3 +/- 8.1) than at baseline. The mean percentage change in serum collagen III was positively correlated with both the mean percentage improvement by photographic evaluation ( $r = .530, P < .000$ ) and the mean percentage change in the ECCA scale ( $r = .632, P < .000$ ). Conclusion: Circulating collagen III is a biomarker for improvement of postacne scarring following different therapies.

Abdu R, Vasylyuk A, Reddy N, Huang LC, Halka JT, **DeMare A, Janczyk R and Iacco A** (2020). "Hybrid robotic transversus abdominis release versus open: Propensity-matched analysis of 30-day outcomes." [Hernia](#). ePub Ahead of Print.

[Full Text](#)

*Department of Surgery*

*OUIB Medical Student Author*

Purpose: To examine the hospital length of stay (LOS) and 30 day outcomes of hybrid robotic transversus abdominis release (hrTAR) compared with open transversus abdominis release (oTAR). Methods: Patients receiving hrTAR were selected from the AHSQC database and propensity matched with a contemporary cohort of oTAR patients. Results: The cohort included 95 hrTAR and 285 oTAR patients. There was a significantly shorter median LOS in the hrTAR cohort (3 vs. 5 days,  $p < 0.001$ ). The rate of surgical site occurrences in the hrTAR cohort was also lower than for oTAR (5% vs. 15%,  $p = 0.015$ ). Readmission rates were not different between hrTAR and oTAR (6% vs. 8%,  $p = 0.65$ ). Conclusion: hrTAR demonstrates improved LOS compared to oTAR as well as fewer surgical site related occurrences. Further studies are needed to investigate the etiology behind the improved LOS and to confirm appropriate long-term outcomes from hybrid robotic TAR.

Akyol S, **Yilmaz A**, Oh KJ, Ugur Z, Aydas B, McGuinness B, Passmore P, Kehoe PG, **Maddens M**, Green BD and **Graham SF** (2020). "Evidence that the Kennedy and polyamine pathways are dysregulated in human brain in cases of dementia with Lewy bodies." [Brain Research](#) 1743: 146897.

[Full Text](#)

*Department of Obstetrics & Gynecology*

*Department of Internal Medicine*

Disruptions of brain metabolism are considered integral to the pathogenesis of dementia, but thus far little is known of how dementia with Lewy bodies (DLB) impacts the brain metabolome. DLB is less well known than other neurodegenerative diseases such as Alzheimer's and Parkinson's disease which is perhaps why it is under-investigated. This exploratory study aimed to address current knowledge gaps in DLB research and search for potentially targetable biochemical pathways for therapeutics. It also aimed to better understand metabolic similarities and differences with other dementias. Combined metabolomic analyses of  $(1)H$  NMR and tandem mass spectrometry of neocortical post-mortem brain tissue (Brodmann region 7) from autopsy confirmed cases of DLB ( $n = 15$ ) were compared with age/gender-matched, non-cognitively impaired healthy controls ( $n = 30$ ). Following correction for multiple comparisons, only 2 metabolites from a total of 219 measured compounds significantly differed. Putrescine was suppressed (55.4%) in DLB and O-phosphocholine was elevated (52.5%). We identified a panel of 5 metabolites (PC aa C38:4, O-Phosphocholine, putrescine, 4-Aminobutyrate, and SM C16:0) capable of accurately discriminating between DLB and control subjects. Deep Learning (DL) provided the best predictive model following 10-fold cross validation (AUROC (95% CI) = 0.80 (0.60-1.0)) with sensitivity and specificity equal to 0.92 and 0.88, respectively. Altered brain levels of putrescine and O-phosphocholine indicate that the Kennedy pathway and polyamine metabolism are perturbed in DLB. These are accompanied by a consistent underlying trend of lipid dysregulation. As yet it is unclear whether these are a cause or consequence of DLB onset.

Alberts NM, Badawy SM, Hodges J, Estepp JH, Nwosu C, **Khan H**, Smeltzer MP, **Homayouni R**, Norell S, Klesges L, Porter JS and Hankins JS (2020). "Development of the InCharge Health Mobile App to improve adherence to

hydroxyurea in patients with sickle cell disease: User-centered design approach." [JMIR mHealth uHealth](#) 8(5): e14884.  
[Full Text](#)

*OUWB Medical Student Author*

*Department of Foundational Medical Studies (OU)*

Background: Sickle cell disease (SCD) is an inherited blood disorder causing acute complications and chronic progressive end organ damage. SCD is associated with significant morbidity, early mortality, impaired health-related quality of life, and increased acute health care utilization. Hydroxyurea is a US Food and Drug Administration-approved medication that reduces disease complications, acute health care utilization, and costs. However, adherence to hydroxyurea is suboptimal. Mobile health (mHealth) interventions have the potential to improve hydroxyurea adherence, but few examples exist that are specific to the SCD population. Objective: This study aimed to design a mHealth intervention for individuals with SCD to improve adherence to hydroxyurea, using a user-centered design that was informed by specific barriers to hydroxyurea adherence and utilization in this population. Methods: This study consisted of 4 phases. In phase 1, individuals with SCD and health care providers participated in an optimization digital workshop. In phase 2, patients completed surveys pertaining to their interest in mHealth use, barriers and facilitators to hydroxyurea use, and health literacy. Phases 3 and 4 involved semistructured interviews and focus groups, respectively, and used the Health Belief Model (HBM) as the framework to investigate drivers of poor hydroxyurea adherence and to inform the development of an app prototype. In addition, in phase 4, we have incorporated the patients' feedback on the preliminary app prototype and its features. Results: Barriers to hydroxyurea adherence were consistent with the literature and included forgetfulness and several specific thoughts and emotions associated with hydroxyurea use (eg, fear of side effects, depression, stigma, and hopelessness). In addition, more than half of the participants reported potentially low health literacy. Preferred patient app features included 7 key components, namely (1) medication reminders and tracker, (2) disease education, (3) communication, (4) personalization, (5) motivation, (6) support during pain episodes, and (7) social support. Utilizing a user-centered design approach, data obtained from patients and providers were translated into features within the app, mapping to components of the HBM and the specific drivers of hydroxyurea adherence and matching the literacy level of the population, resulting in the development of a novel mobile app called InCharge Health. Conclusions: The InCharge Health app is an mHealth intervention developed with substantial input from users and by mapping the HBM as the framework that guided the choice for its components. InCharge Health is a customized product for the SCD population aimed at optimizing medication adherence, with the end goal of improving quality of life and health outcomes among patients with SCD. The efficacy and implementation of the InCharge Health app as an mHealth intervention to promote hydroxyurea adherence will be tested in a future stepped-wedge multicenter trial for adolescents and adults with SCD.

**Al-Hadidi A**, Alslaim H, Ghawanmeh M, Alfarajat F, Habra H, Brahmamdam P and **Novotny N** (2020). "Short-term surgical trips: Local collaboration and its effects on complications and patient satisfaction." [Pediatric Surgery International](#) 36(8): 977-981.

[Full Text](#)

*OUWB Medical Student Author*

*Department of Surgery*

Purpose: Short-term surgical missions can provide communities in need with desired expertise; however, it is uncertain who will manage the complications after visiting experts leave. Poor outcomes, decreased patient satisfaction, and tension on the healthcare system develop when local providers, often excluded from the initial patient care, are unable to cope with subsequent morbidity. Methods: Two-year retrospective review of pediatric general, plastic, and reconstructive surgery, and urology cases performed by a relief organization in the developing world. Case complexity and postoperative complications were analyzed. Phone interviews conducted with patients/families to quantify postoperative outcomes and satisfaction. Results: 474 surgeries were performed on pediatric patients with 60% response rate. Respondents stratified into three levels of complexity: 159 simple, 72 intermediate, and 54 advanced surgeries. Six (2.1%) high-level complications occurred. No association between the complexity of the surgery and the occurrence of a complications. 83.5% were satisfied with outcomes and > 92% were happy with the provided support. Conclusion: Facilitating visiting and local surgeons performing cases together increases the expertise of local providers, strengthens infrastructure, and establishes clear follow-up. Despite complications, patients and families

continued to recommend care to family and friends by the relief organization and were happy with support from local providers. Engaging local providers is the gold-standard for short-term trips.

**Al-Hadidi A**, Lapkus M, **Karabon P**, **Naseem A**, Akay B and **Khandhar P** (2020). "Success of respiratory rescue therapy in preventing reintubation in a pediatric intensive care unit." Critical Care Medicine 48(1): 153.

[Full Text](#)

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*Department of Pediatrics*

*Department of Medical Studies*

Al-Katib S, Gupta G, **Brudvik A**, Ries S, Krauss J and **Farah M** (2020). "A practical guide to managing CT findings in the breast." Clinical Imaging 60(2): 274-282.

[Full Text](#)

*Department of Diagnostic Radiology and Molecular Imaging*

While it is well accepted that CT is not an optimal imaging study to evaluate the breasts, findings on chest CT may be the first indication of an occult malignancy. The nonspecific appearance of breast findings and the lack of consensus guidelines for managing incidental breast findings may dissuade radiologists from thoroughly evaluating the breasts on CT. We review commonly encountered breast findings on CT and present an algorithm for managing incidentally detected breast findings.

Allen O and **Dixon SR** (2020). "Unstable angina in a low-risk patient: "Zero" does not mean no-risk." Journal of the American College of Cardiology 75(11): 3026.

[Full Text](#)

*Department of Internal Medicine*

**Allen S**, Petersen A, Harrison K, Tosun N and **Cameron J** (2020). "Response to nicotine following overnight smoking abstinence during short-term progesterone treatment in women." Experimental and Clinical Psychopharmacology 28(3): 306-316.

[Full Text](#)

*Department of Internal Medicine*

*OUWB Medical Student Author*

Preclinical and clinical literature suggest that sex hormones impact tobacco use behaviors in women. The goal of this double-blind crossover laboratory study was to examine the effect of oral exogenous progesterone (200 mg twice per day) versus placebo on nicotine response using measures of motor speed and cognitive function in women following overnight smoking abstinence. We hypothesized that increased progesterone would blunt the nicotine response whereby producing less change in motor speed and cognition in response to nicotine exposure. Female smokers, age 18-35, were randomized to participate in two 9-day crossover testing weeks. Participants completed a lab session following overnight abstinence where they were administered nicotine nasal spray and asked to complete measures of immediate memory (IMT), delayed memory (DMT), word recall (WR), and finger tapping speed (FT). After the first 9-day testing week, participants resumed smoking and returned the following month to complete the identical lab session in the crossover condition. Forty-seven women were included in this analysis (n = 47). We found no differences in the magnitude of response for IMT, DMT, and WR between conditions. For FT, women had a blunted response to nicotine during the placebo condition. When examining the association between hormone levels and relative performance, we found increases in DMT, WR, and FT but decreases in IMT during the progesterone condition. We observed differences between progesterone versus placebo in relative change in some measures of nicotine response following overnight abstinence. Future studies are needed to further characterize this response.

Almahariq MF, Quinn TJ, Siddiqui ZA, Thompson AB, **Jawad MS**, **Chen PY**, **Gustafson GS** and **Dilworth JT** (2020). "Post-mastectomy radiotherapy is associated with improved overall survival in T3N0 patients who do not receive chemotherapy." Radiotherapy and Oncology 145: 229-237.

[Full Text](#)

*Department of Radiation Oncology*

Background and Purpose: There is limited retrospective evidence addressing the utility of post-mastectomy radiotherapy (PMRT) in patients with T3N0 breast cancer. We performed a retrospective analysis of the National Cancer Database (NCDB) comparing overall survival (OS) in T3N0 patients treated with mastectomy alone (MTX) or with PMRT. Materials and Methods: We performed a matched-cohort analysis of NCDB breast cancer patients with pT3N0 disease who did not receive NAC, or cT3N0 patients who received NAC treated between 2006 and 2014. Patients were matched for all available baseline characteristics using propensity scores with inverse probability of treatment weighting (IPTW) with stabilized weights. Results: We identified 13,901 eligible patients. In the pT3N0 cohort, median follow-up was 47 months for the MTX group and 50 months for the PMRT group. In the cT3N0 cohort, median follow-up was 44 months for the MTX group and 46 months for the PMRT group. OS was higher in pT3N0 patients treated with PMRT compared to MTX: 7-year OS of 74% vs. 65% (P < 0.001). Doubly robust multivariable analysis showed an association between PMRT and improved OS (HR 0.78, 95% CI 0.68-0.89, P < 0.001). There was no benefit to PMRT in patients who received adjuvant chemotherapy (AC). In the NAC cohort, PMRT did not change OS, with 7-year OS of 78% with MTX and 79% with PMRT. There was a trend of improved OS with PMRT in patients with residual disease in the breast and lymph nodes (HR 0.70, 95% CI 0.46-1.07). Conclusion: PMRT improves OS in patients with pT3N0 disease, but the benefit appears limited to those who do not receive AC. PMRT does not improve OS in patients with cT3N0 disease who receive NAC, but there might be a benefit in patients with a poor response to chemotherapy. However, longer follow-up may be needed to make a definitive conclusion about the benefit of PMRT in patients who receive chemotherapy.

Alpay Savasan Z, Kim SK, Oh KJ and **Graham SF** (2020). "Advances in cerebral palsy biomarkers," In Gregory Makowski's [Advances in Clinical Chemistry](#). Elsevier. ePub Ahead of Print.

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*Department of Obstetrics & Gynecology*

Cerebral palsy (CP), defined as a group of nonprogressive disorders of movement and posture, is the most common cause of severe neurodisability in children. The prevalence of CP is the same across the globe, affecting approximately 17 million people worldwide. Cerebral Palsy is an umbrella term used to describe the disease due to its inherent heterogeneity. For instance, CP has multiple (1) causes; (2) clinical types; (3) patterns of neuropathology on brain imaging and (4) it's associated with several developmental pathologies such as intellectual disability, autism, epilepsy, and visual impairment. Understanding its physiopathology is crucial to developing protective strategies. Despite its importance, there is still insufficient progress in the areas of CP prediction, early diagnosis, treatment, and prevention. Herein we describe the current risk factors and biomarkers used for the diagnosis and prediction of CP. With the advancement in biomarker discovery, we predict that our understanding of the etiopathophysiology of CP will also increase, lending to more opportunities for developing novel treatments and prognosis.

Alslaim HS, **Banooni AB**, Shaltaf A and **Novotny NM** (2020). "Tracheoesophageal fistula in the developing world: Are we ready for thoracoscopic repair?" [Pediatric Surgery International](#) 36(5): 649-654.

[Full Text](#)

*Department of Anesthesiology*

*Department of Surgery*

Purpose: Tracheoesophageal fistula (TEF) is a bellwether for a country's ability to care for sick newborns. We aim to review the existing literature from low- and middle-income countries in regard to management of those newborns and the possible approaches to improve their outcomes. Methods: A review of the existing English literature was conducted with the aim of assessing challenges faced by providers in LMIC in terms of diagnostic, preoperative, operative and post-operative care for TEF patients. We also review the limited literature for performing thoracoscopic repair in the developing world context and suggest methods for introduction of advanced thoracoscopic procedures including techniques for providing anesthesia to these challenging babies. Results: While outcomes related to technique from LMIC are comparable to the developed world, rates of secondary complications like sepsis and pneumonia are higher. In many areas, repairs are conducted in a staged fashion with minimal utilization of thoracoscopic approach. The paucity of resources creates strain on intraoperative and post-operative management. Conclusion: Clearly, not all developing world contexts are ready to attempt thoracoscopic repair but we outline suggestions for assessing the existing capabilities and a stepwise gradual implementation of advanced thoracoscopy when



appropriate.

**Angus A**, DeMare A, Kawak S, Rizk M, **Pastewski J**, **Burk C**, **Mahmoudian C**, **Khandhar P** and **Stallion A** (2020). "Splenic trauma in a patient with heterotaxy: A case report and brief review of laterality defects." Critical Care Medicine 48(1): 881.

[Full Text](#)

*OUWB Medical Student Author*

*Department of Pediatrics*

*Department of Ophthalmology*

Anusim N, Ionescu F, Khoury J, Konde A and **Jaiyesimi I** (2020). "Demographics and survival in metastatic inflammatory breast cancer. SEER data analysis." Cancer Research 80(4): Supp.

[Full Text](#)

*Department of Internal Medicine*

**Baker EA**, Vara AD, Salisbury MR, Fleischer MM, **Baker KC**, **Fortin PT**, Roberts RV and Friedrich CR (2020). "Titania nanotube morphologies for osseointegration via models of in vitro osseointegrative potential and in vivo intramedullary fixation." Journal of Biomedical Materials Research - Part B Applied Biomaterials 108(4): 1483-1493.

[Full Text](#)

*Department of Orthopaedic Surgery*

As total joint replacements increase annually, new strategies to attain solid bone-implant fixation are needed to increase implant survivorship. This study evaluated two morphologies of titania nanotubes (TiNT) in in vitro experiments and an in vivo rodent model of intramedullary fixation, to simulate joint arthroplasty conditions. TiNT surfaces were prepared via an electrochemical etching process, resulting in two different TiNT morphologies, an aligned structure with nanotubes in parallel and a trabecular bone-like structure. In vitro data showed bone marrow cell differentiation into osteoblasts as well as osteoblastic phenotypic behavior through 21 days. In vivo, both TiNT morphologies generated greater bone formation and bone-implant contact than control at 12 weeks, as indicated by  $\mu$ CT analyses and histology, respectively. TiNT groups also exhibited greater strength of fixation compared to controls, when subjected to wire pull-out testing. TiNT may be a promising surface modification for promoting osseointegration.

Balanescu DV, Donisan T, Mertens A and **Hanson I** (2020). "Early improvement in right ventricular dysfunction following transseptal transcatheter mitral valve-in-valve replacement." Journal of the American College of Cardiology 75(11): 2981.

[Full Text](#)

*Department of Internal Medicine*

**Balinski AM** and Preuss CV (2020). "Cilostazol," In, *StatPearls*, Treasure Island, FL: StatPearls Publishing LLC.

[Full Text](#)

*OUWB Medical Student Author*

Cilostazol is a quinolone derivative primarily used in the treatment of intermittent claudication associated with early-stage peripheral vascular disease. Intermittent claudication is a condition caused by the narrowing of arteries that supply the legs with oxygenated blood. Patients with intermittent claudication develop pain when walking due to a lack of oxygen-containing blood reaching the operating leg muscles. Cilostazol decreases the pain of intermittent claudication by dilating these arteries, which improves blood flow and oxygen to the legs. Cilostazol is an effective therapy for improving walking distances in patients with intermittent claudication, and the artery disease guidelines of the American College of Cardiology/American Heart Association reference a therapeutic trial of cilostazol. [Level I] Cilostazol has also demonstrated to be significantly more effective than clopidogrel and aspirin alone for long-term prevention of severe vascular events in patients with a history of transient ischemic attack or non-cardioembolic ischemic stroke.

**Balinski AM**, Kerndt CC, Parry NP, Rehman RA, Yeow RY and Hayek SS (2020). "Metastatic melanoma of the heart: A systematic review." Journal of Clinical Oncology 38(15\_suppl): e22017.

[Full Text](#)

*OUWB Medical Student Author*

Background: Melanomas are highly aggressive tumors that can metastasize to a wide array of organs, including the heart. Cardiac metastasis is rare and most often diagnosed post-mortem. Here, we perform a systematic review evaluating patient demographics, characteristics, management, and outcomes of cardiac melanoma metastases. Methods: A comprehensive literature review was performed in Cochrane Library, PubMed, and EmBase databases. Study quality was determined based on study design and clinical endpoints using the Oxford Center for Evidence Based Medicine (OCEBM) Levels of Evidence categorization. Demographic data, patient symptomatology, imaging findings, management strategies, and patient outcomes were collected and analyzed. Results: Thirty studies, all case reports or case series, met inclusion criteria. In total, 33 patients with cardiac metastasis from melanoma were identified and histologically confirmed. All 30 studies included in this review received an evidence level of 4 based on OCEBM Levels of Evidence categorization. The most common presenting symptom at the time of diagnosis of cardiac metastasis was shortness of breath (36.4%) and the most common physical exam finding was tachycardia (24.2%). The most common site of cardiac metastasis was the left ventricle (41.9%), followed by the right atrium (35.5%). Notable echocardiogram findings included right ventricular inflow obstruction (27.6%) and valvular dysfunction (24.1%). Valvular dysfunction, classified as prolapse, regurgitation, or stenosis, always involved the tricuspid valve. Treatment strategies typically involved surgical intervention (66.7%), chemotherapy (39.4%), or chemotherapy with surgical intervention (15.2%). Of the 22 cases that reported outcomes, the majority (59.1%) were disease-free without evidence of recurrence. Two patients (9.1%) experienced recurrence within one year of treatment and eight patients (36.4%) expired within 12 months. Conclusions: When symptomatic, cardiac melanoma metastases typically present with shortness of breath and tachycardia, with a predilection for the left ventricle and right atrium. Surgical intervention is currently the mainstay of treatment for successful cardiac melanoma metastasis management.

**Barbat A, Partiali B, Oska S and Folbe A** (2020). "Head, face, and neck fractures secondary to ladder-related injuries treated in United States emergency departments in 2009–2018." *Journal of Emergency Medicine*. ePub Ahead of Print. [Full Text](#)

*Department of Surgery*

*OUWB Medical Student Author*

Background: Ladders are a commonly used piece of equipment; however, their use is accompanied by a significant potential for injury. Fractures of the head, face, and neck are potential consequences of ladder use and can be devastating due to potential for severe sequelae. Objectives: To describe the frequency and pattern of ladder-related head, face, and neck fractures from 2009–2018. Methods: The National Electronic Injury Surveillance System (NEISS) was searched for ladder-related head, face, and neck fractures treated in U.S. emergency departments. Demographics, mechanism of injury, fracture type, setting in which fracture occurred, and patient disposition were analyzed. Results: There were 601 total cases (weighted national estimate of 20,450 total cases) of ladder-related head, face, and neck fractures obtained from the NEISS from 2009 to 2018. The mean age of injury was 53 years, and the majority of cases occurred in home settings. Approximately 25% of the cases were patients aged older than 65 years. The majority of fractures in individuals younger than 18 years and older than 46 years of age resulted in admission. The most commonly fractured locations included the face (51.0%), followed by cervical spine (28.3%) and cranial (20.7%) fractures. Conclusions: Admission rates for ladder-related head, face, and neck fractures are substantially higher than those previously reported for all types of ladder-related injuries. Injury and admission patterns vary by age. Rigorous safety precautions may be indicated for the high-risk groups identified by this study, especially the elderly.

Barrick L, **Cohen DM**, Schober MS and Schwaderer A (2020). "National imaging trends of recurrent pediatric urolithiasis." *Pediatric Emergency Care* 36(4): e217-e221.

[Request Form](#)

*Department of Pediatrics*

Objectives: The aim of this study was to examine computed tomography (CT) and ultrasound (US) utilization trends in incident and prevalent pediatric emergency department (ED) urolithiasis patients before and after imaging guideline release. Methods: We reviewed imaging modalities for children with 2 or more ED



encounters between January 1, 2006, and September 1, 2013, for urolithiasis using the Pediatric Health Information System database. Z scores compared the proportion of patient encounters receiving CT and US before (January 1, 2006, to December 31, 2010) and after (January 1, 2011, to September 1, 2013) the release of imaging guidelines. McNemar test for paired proportions compared the percentage of US and CT use between initial versus subsequent visits. Piecewise logistic regression was used to determine the probability of US use and CT use over time before and after the implementation of imaging guidance. Results: Analysis was completed on 2041 patients with 4930 unique encounters for urolithiasis. During 1758 encounters (35.7%), CT was performed initially. Ultrasound was performed 1585 times (32.2%). Fourteen percent fewer CT procedures were performed during first urolithiasis visits after guideline release ( $P < 0.01$ ), whereas US use increased by 15% ( $P < 0.01$ ). Fewer CT procedures were performed at later visits compared with the first ( $P < 0.05$ ), and US was used more during second or later visits than the first ( $P < 0.05$ ). Conclusions: Medical providers at large academic pediatric EDs have decreased use of CT and increased use of US over the study time frame to diagnose urolithiasis and are now similar during initial visits (US 36.4% vs CT 36.2%,  $P = 0.94$ ). Physicians are still more likely to use US as the initial urolithiasis imaging modality during second and later encounters.

Baskaran L, Al'Aref SJ, Maliakal G, Lee BC, Xu ZR, Choi JW, Lee SE, Sung JM, Lin FY, Dunham S, Mosadegh B, Kim YJ, Gottlieb I, Lee BK, Chun EJ, Cademartiri F, Maffei E, Marques H, Shin SH, Choi JH, **Chinnaiyan K**, Hadamitzky M, Conte E, Andreini D, Pontone G, Budoff MJ, Leipsic JA, **Raff GL**, Virmani R, Samady H, Stone PH, Berman DS, Narula J, Bax JJ, Chang HJ, Min JK and Shaw LJ (2020). "Automatic segmentation of multiple cardiovascular structures from cardiac computed tomography angiography images using deep learning." *PLoS ONE* 15(5): e0232573.

[Full Text](#)

*Department of Internal Medicine*

Background: Segmentation of cardiovascular images is resource-intensive. We design an automated deep learning method for the segmentation of multiple structures from Coronary Computed Tomography Angiography (CCTA) images. Methods: Images from a multicenter registry of patients that underwent clinically-indicated CCTA were used. The proximal ascending and descending aorta (PAA, DA), superior and inferior vena cavae (SVC, IVC), pulmonary artery (PA), coronary sinus (CS), right ventricular wall (RVW) and left atrial wall (LAW) were annotated as ground truth. The U-net-derived deep learning model was trained, validated and tested in a 70:20:10 split. Results: The dataset comprised 206 patients, with 5.130 billion pixels. Mean age was 59.9 +/- 9.4 yrs., and was 42.7% female. An overall median Dice score of 0.820 (0.782, 0.843) was achieved. Median Dice scores for PAA, DA, SVC, IVC, PA, CS, RVW and LAW were 0.969 (0.979, 0.988), 0.953 (0.955, 0.983), 0.937 (0.934, 0.965), 0.903 (0.897, 0.948), 0.775 (0.724, 0.925), 0.720 (0.642, 0.809), 0.685 (0.631, 0.761) and 0.625 (0.596, 0.749) respectively. Apart from the CS, there were no significant differences in performance between sexes or age groups. Conclusions: An automated deep learning model demonstrated segmentation of multiple cardiovascular structures from CCTA images with reasonable overall accuracy when evaluated on a pixel level.

**Bersani K**, Fuller TE, Garabedian P, Espares J, Mlaver E, Businger A, Chang F, Boxer RB, Schnock KO, Rozenblum R, Dykes PC, Dalal AK, Benneyan JC, Lehmann LS, Gershanik EF, Bates DW and Schnipper JL (2020). "Use, perceived usability, and barriers to implementation of a patient safety dashboard integrated within a vendor EHR." *Applied Clinical Informatics* 11(1): 34-45.

[Full Text](#)

*OUIWB Medical Student Author*

Background: Preventable adverse events continue to be a threat to hospitalized patients. Clinical decision support in the form of dashboards may improve compliance with evidence-based safety practices. However, limited research describes providers' experiences with dashboards integrated into vendor electronic health record (EHR) systems. Objective: This study was aimed to describe providers' use and perceived usability of the Patient Safety Dashboard and discuss barriers and facilitators to implementation. Methods: The Patient Safety Dashboard was implemented in a cluster-randomized stepped wedge trial on 12 units in neurology, oncology, and general medicine services over an 18-month period. Use of the Dashboard was tracked during the implementation period and analyzed in-depth for two 1-week periods to gather a detailed representation of use. Providers' perceptions of tool usability were measured using the Health Information Technology Usability Evaluation Scale (rated 1-5). Research assistants conducted field observations

throughout the duration of the study to describe use and provide insight into tool adoption. Results: The Dashboard was used 70% of days the tool was available, with use varying by role, service, and time of day. On general medicine units, nurses logged in throughout the day, with many logins occurring during morning rounds, when not rounding with the care team. Prescribers logged in typically before and after morning rounds. On neurology units, physician assistants accounted for most logins, accessing the Dashboard during daily brief interdisciplinary rounding sessions. Use on oncology units was rare. Satisfaction with the tool was highest for perceived ease of use, with attendings giving the highest rating (4.23). The overall lowest rating was for quality of work life, with nurses rating the tool lowest (2.88). Conclusion: This mixed methods analysis provides insight into the use and usability of a dashboard tool integrated within a vendor EHR and can guide future improvements and more successful implementation of these types of tools.

Bradley CJ and **Haines DE** (2020). "Pulsed field ablation for pulmonary vein isolation in the treatment of atrial fibrillation." Journal of Cardiovascular Electrophysiology. ePub Ahead of Print.

[Full Text](#)

*Department of Internal Medicine*

Pulsed-field ablation (PFA) is a promising new ablation modality for the treatment of atrial fibrillation. This energy form employs a train of microsecond duration high amplitude electrical pulses that ablate myocardium by electroporation of the sarcolemmal membrane without measurable tissue heating. The ablation pulse waveform has multiple variable components that can affect ablation efficacy, thus each proprietary system has unique properties that cannot be generalized to other systems. Success with PFA depends upon the proximity of the electrode to the target tissue, but not necessarily upon contact. A unique feature of PFA is tissue specificity. Myocardium is very susceptible to irreversible injury whereas the esophagus, phrenic nerves, pulmonary veins, and coronary arteries are relatively resistant to injury. The tissue specificity of PFA may result in a wide therapeutic range and improved safety profile during atrial fibrillation ablation. Vein isolation can be achieved very rapidly (seconds) promising that PFA may reduce procedure time to 1 hour or less. This attractive new technology promises to be a major advance in the field of atrial fibrillation ablation.

Burns WP, Hartman ND, Weygandt PL, **Jones SC**, Caretta-Weyer H and Moore KG (2020). "Critical electrocardiogram curriculum: Setting the standard for flipped-classroom EKG instruction." Western Journal of Emergency Medicine 21(1): 52-57.

[Full Text](#)

*Department of Emergency Medicine*

Introduction: Electrocardiogram (EKG) interpretation is integral to emergency medicine (EM).(1) In 2003 Ginde et al. found 48% of emergency medicine (EM) residency directors supported creating a national EKG curriculum.(2) No formal national curriculum exists, and it is unknown whether residents gain sufficient skill from clinical exposure alone. Methods: The authors sought to assess the value of this EKG curriculum, which provides exposure to critical EKG patterns, a framework for EKG interpretation when the diagnosis is not obvious, and implementation guidelines and open access to any interested residency. The Foundations of Emergency Medicine (FoEM) EKG I course launched in January 2016, followed by EKG II in July 2017; they are benchmarked to post-graduate year 1 (PGY) and PGY2 level learners, respectively. Selected topics included 15 published critical EKG diagnoses and 33 selected by the authors.(5) Cases included presenting symptoms, EKGs, and Free Open Access Medical Education (FOAM) links. Full EKG interpretations and question answers were provided. Results: Enrollment during 2017-2018 included 37 EM residencies with 663 learners in EKG I and 22 EM residencies with 438 learners in EKG II. Program leaders and learners were surveyed annually. Leaders indicated that content was appropriate for intended PGY levels. Leaders and learners indicated the curriculum improved the ability of learners to interpret EKGs while working in the emergency department (ED). Conclusion: There is an unmet need for standardization and improvement of EM resident EKG training. Leaders and learners exposed to FoEM EKG courses report improved ability of learners to interpret EKGs in the ED.

Campos A, Ernest EV, Cash RE, Rivard MK, Panchal AR, Clemency BM, **Swor RA** and Crowe RP (2020). "The association of death notification and related training with burnout among emergency medical services professionals." Prehospital

[Emergency Care](#). ePub Ahead of Print.

[Request Form](#)

*Department of Emergency Medicine*

Introduction: Death notification is a difficult task commonly encountered during prehospital care and may lead to burnout among EMS professionals. Lack of training could potentiate the relationship between death notification and burnout. The first objective of this study was to describe EMS professionals' experience with death notification and related training. The secondary objective was to assess the associations between death notification delivery, training, and burnout. Methods: We administered an electronic questionnaire to a random sample of nationally-certified EMS professionals. Work-related burnout was measured using the validated Copenhagen Burnout Inventory. Analysis was stratified by certification level to basic life support (BLS) and advanced life support (ALS). The association between the number of adult (>=18 years) patient death notifications delivered in the prior 12 months and burnout was assessed using multivariable logistic regression to adjust for confounding variables. Multivariable logistic regression modelling was used to assess the adjusted association between training and burnout among those who reported delivering at least one death notification in the prior 12 months. Adjusted odds ratios (aOR) and 95% confidence intervals are reported (95% CI). Results: We received 2,333/19,330 (12%) responses and 1,514 were included in the analysis. Most ALS respondents (77%) and one-third of BLS respondents (33%) reported at least one adult death notification in the past year. Approximately half of respondents reported receiving death notification training as part of their initial EMS education program (51% BLS; 52% ALS) and fewer reported receiving continuing education (30% BLS; 44% ALS). Delivering a greater number of death notifications was associated with increased odds of burnout. Among those who delivered at least one death notification, continuing education was associated with reduced odds of burnout. Conclusion: Many EMS professionals reported delivering at least one death notification within the past year. Yet, fewer than half reported training related to death notification during initial EMS education and even fewer reported receiving continuing education. More of those who delivered death notifications experienced burnout, while continuing education was associated with reduced odds of burnout. Future work is needed to develop and evaluate death notification training specifically for EMS professionals.

**Cappell MS** (2020). "Moderately severe diarrhea and impaired renal function with COVID-19 infection." [The American Journal of Gastroenterology](#) 115(6): 947-948.

[Full Text](#)

*Department of Internal Medicine*

Chahla J, **Hinckel BB**, Yanke AB, Farr J and Metrics Osteochondral A (2020). "An expert consensus statement on the management of large chondral and osteochondral defects in the patellofemoral joint." [Orthopaedic Journal of Sports Medicine](#) 8(3): 1-10.

[Full Text](#)

*Department of Orthopaedic Surgery*

Background: Cartilage lesions of the patellofemoral joint constitute a frequent abnormality. Patellofemoral conditions are challenging to treat because of complex biomechanics and morphology. Purpose: To develop a consensus statement on the functional anatomy, indications, donor graft considerations, surgical treatment, and rehabilitation for the management of large chondral and osteochondral defects in the patellofemoral joint using a modified Delphi technique. Study Design: Consensus statement. Methods: A working group of 4 persons generated a list of statements related to the functional anatomy, indications, donor graft considerations, surgical treatment, and rehabilitation for the management of large chondral and osteochondral defects in the patellofemoral joint to form the basis of an initial survey for rating by a group of experts. The Metrics of Osteochondral Allografts (MOCA) expert group (composed of 28 high-volume cartilage experts) was surveyed on 3 occasions to establish a consensus on the statements. In addition to assessing agreement for each included statement, experts were invited to propose additional statements for inclusion or to suggest modifications of existing statements with each round. Predefined criteria were used to refine statement lists after each survey round. Statements reaching a consensus in round 3 were included within the final consensus document. Results: A total of 28 experts (100% response rate) completed 3 rounds of surveys. After 3 rounds, 36 statements achieved a consensus, with over 75% agreement and less than 20% disagreement. A consensus was reached in 100.00% of the statements relating to functional anatomy of the

patellofemoral joint, 88.24% relating to surgical indications, 100.00% relating to surgical technical aspects, and 100.00% relating to rehabilitation, with an overall consensus of 95.5%. Conclusion: This study established a strong expert consensus document relating to the functional anatomy, surgical indications, donor graft considerations for osteochondral allografts, surgical technical aspects, and rehabilitation concepts for the management of large chondral and osteochondral defects in the patellofemoral joint. Further research is required to clinically validate the established consensus statements and better understand the precise indications for surgery as well as which techniques and graft processing/preparation methods should be used based on patient- and lesion-specific factors.

**Chancellor MB** and Smith CP (2020). "Use of botulinum toxin in the genitourinary system," In Handbook of Experimental Pharmacology Springer: Berlin, Heidelberg.

[Full Text](#)

*Department of Urology*

Botulinum toxin injection has been widely accepted by the urology and urogynecology medical communities as a safe and effective treatment for refractory urinary incontinence. There are two approved genitourinary indications for botulinum toxin. OnabotulinumtoxinA (onaBoNTA) 200 U for the treatment of urinary incontinence due to detrusor overactivity associated with a neurologic condition (e.g., spinal cord injury, multiple sclerosis) in adults who have an inadequate response to or are intolerant of an anticholinergic medication. In addition, onaBoNTA 100 U is used for the treatment of overactive bladder with symptoms of urinary incontinence, urgency, and frequency, in adult patients who have an inadequate response to or are intolerant of an anticholinergic medication. We will discuss the application of botulinum toxin for genitourinary indications with a focus on bladder injection and on potential use of BoNT use in the prostate and pelvic floor.

**Chang AM**, Hollander JE, Su E, Weiss RE, Yagapen AN, Malveau SE, Adler DH, **Bastani A**, Baugh CW, Caterino JM, **Clark CL**, Diercks DB, Nicks BA, Nishijima DK, **Shah MN**, Stiffler KA, Storrow AB, Wilber ST and Sun BC (2020). "The accuracy of interqual criteria in determining the observation versus inpatient status in older adults with syncope." Journal of Emergency Medicine. ePub Ahead of Print.

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*OUIWB Medical Student Author*

*Department of Emergency Medicine*

Background: McKesson's InterQual criteria are widely used in hospitals to determine if patients should be classified as observation or inpatient status, but the accuracy of the criteria is unknown. Objective: We sought to determine whether InterQual criteria accurately predicted length of stay (LOS) in older patients with syncope. Methods: We conducted a secondary analysis of a cohort study of adults  $\geq 60$  years of age who had syncope. We calculated InterQual criteria and classified the patient as observation or inpatient status. Outcomes were whether LOS were less than or greater than 2 midnights. Results: We analyzed 2361 patients; 1227 (52.0%) patients were male and 1945 (82.8%) were white, with a mean age of  $73.2 \pm 9.0$  years. The median LOS was 32.6 h (interquartile range 24.2–71.8). The sensitivity of InterQual criteria for LOS was 60.8% (95% confidence interval 57.9–63.6%) and the specificity was 47.8% (95% confidence interval 45.0–50.5%). Conclusions: In older adults with syncope, those who met InterQual criteria for inpatient status had longer LOS compared with those who did not; however, the accuracy of the criteria to predict length of stay over 2 days is poor, with a sensitivity of 60% and a specificity of 48%. Future research should identify criteria to improve LOS prediction.

**Chen BB**, Kanaan C, **Jaiyesimi I**, Ezekwudo D and **Swor R** (2020). "Clinical characteristics of patients with cancer presenting to the emergency department and their use of emergency medical service transport." Prehospital Emergency Care. ePub Ahead of Print.

[Request Form](#)

*Department of Emergency Medicine*

*Department of Internal Medicine*

*OUIWB Medical Student Author*

Objectives: Although life-threatening emergencies for cancer patients are relatively rare, cancer patients often seek care in the emergency department. The use of emergency medical service (EMS) by these patients

is not well studied. The aim of this study was to investigate the characteristics of cancer patients who present to the emergency department (ED) for care and compare characteristics of patients transported by EMS vs. those transported by private vehicle. Methods: Our retrospective cohort study was conducted in an EMS system with 21,070 annual transports and an academic ED with 129,263 annual visits. Our study consisted of patients with a new diagnosis of cancer between January 1 and July 1, 2015 who subsequently presented to the ED between January 1, 2015 and July 1, 2017. Study variables included patient demographics, mode of ED arrival, cancer type and treatment, patient clinical characteristics, and disposition. To describe differences in patient characteristics of EMS vs. private vehicle transport, we report variable frequencies and stratified them by mode of transport. Results: Of the 2,727 patients with a new diagnosis of cancer, 1,303 (47.8%) presented to the ED with a total of 3,590 visits in 30 months. EMS transported 22% of cancer patients to the ED vs. 78% transported by private vehicle. Thus, cancer patients would make up approximately 1.5% (781/52,675) of all EMS transports during the study period. For those transported by EMS, the most common chief complaints were respiratory distress (16.0%), pain (15.4%), and neurological symptoms (12.6%). Patients with cancer of the lung/respiratory tract (21.5%), upper GI (12.4%), and central nervous system (CNS) (11.0%) were most frequently transported by EMS. Older age, presence of CNS cancer, presentation with neurological or cardiovascular complaints, and higher acuity were significantly associated with EMS transport to ED, while gender and pain severity were not. Patients transported by EMS were more likely to be hospitalized and for greater than 2 days ( $p < 0.0001$ ). Conclusions: Cancer patients frequently seek emergency care after initial diagnosis, most commonly present for symptom relief, and are often admitted. Patients transported by EMS are more likely to be admitted and for longer periods of time.

Chen CJ, Lee CC, Kano H, Kearns KN, Ding DL, Tzeng SW, Atik A, Joshi K, Barnett GH, Huang PP, Kondziolka D, Mathieu D, Iorio-Morin C, **Grills IS**, Quinn TJ, Siddiqui ZA, Marvin K, Feliciano C, Faramand A, Lunsford LD, Sheehan JP and Int Radiosurg Res F (2020). "Stereotactic radiosurgery for pediatric brain arteriovenous malformations: Long-term outcomes." Journal of Neurosurgery-Pediatrics 25(5): 497-505.

[Request Form](#)

*Department of Radiation Oncology*

Objective: Contrary to the better described obliteration- and hemorrhage-related data after stereotactic radiosurgery (SRS) of brain arteriovenous malformations (AVMs) in pediatric patients, estimates of the rarer complications, including cyst and tumor formation, are limited in the literature. The aim of the present study was to assess the long-term outcomes and risks of SRS for AVMs in pediatric patients (age < 18 years). Methods: The authors retrospectively analyzed the International Radiosurgery Research Foundation pediatric AVM database for the years 1987 to 2018. AVM obliteration, post-SRS hemorrhage, cyst formation, and tumor formation were assessed. Cumulative probabilities, adjusted for the competing risk of death, were calculated. Results: The study cohort comprised 539 pediatric AVM patients (mean follow-up 85.8 months). AVM obliteration was observed in 64.3% of patients, with cumulative probabilities of 63.6% (95% CI 58.8%-68.0%), 77.1% (95% CI 72.1%-81.3%), and 88.1% (95% CI 82.5%-92.0%) over 5, 10, and 15 years, respectively. Post-SRS hemorrhage was observed in 8.4% of patients, with cumulative probabilities of 4.9% (95% CI 3.1%-7.2%), 9.7% (95% CI 6.4%-13.7%), and 14.5% (95% CI 9.5%-20.5%) over 5, 10, and 15 years, respectively. Cyst formation was observed in 2.1% of patients, with cumulative probabilities of 5.5% (95% CI 2.3%-10.7%) and 6.9% (95% CI 3.1%-12.9%) over 10 and 15 years, respectively. Meningiomas were observed in 2 patients (0.4%) at 10 and 12 years after SRS, with a cumulative probability of 3.1% (95% CI 0.6%-9.7%) over 15 years. Conclusions: AVM obliteration can be expected after SRS in the majority of the pediatric population, with a relatively low risk of hemorrhage during the latency period. Cyst and benign tumor formation after SRS can be observed in 7% and 3% of patients over 15 years, respectively. Longitudinal surveillance for delayed neoplasia is prudent despite its low incidence.

Chesnut R, Aguilera S, Buki A, Bulger E, Citerio G, Cooper DJ, Arrastia RD, Diringier M, Figaji A, Gao GY, Geocadin R, Ghajar J, Harris O, Hoffer A, Hutchinson P, Joseph M, Kitagawa R, Manley G, Mayer S, Menon DK, Meyfroidt G, **Michael DB**, Oddo M, Okonkwo D, Patel M, Robertson C, Rosenfeld JV, Rubiano AM, Sahuquillo J, Servadei F, Shutter L, Stein D, Stocchetti N, Taccone FS, Timmons S, Tsai E, Ullman JS, Vespa P, Videtta W, Wright DW, Zammit C and Hawryluk GWJ (2020). "A management algorithm for adult patients with both brain oxygen and intracranial pressure monitoring: The Seattle International Severe Traumatic Brain Injury Consensus Conference (SIBICC)." Intensive Care Medicine 46(5): 919-929.

[Full Text](#)

*Department of Neurosurgery*

Background: Current guidelines for the treatment of adult severe traumatic brain injury (sTBI) consist of high-quality evidence reports, but they are no longer accompanied by management protocols, as these require expert opinion to bridge the gap between published evidence and patient care. We aimed to establish a modern sTBI protocol for adult patients with both intracranial pressure (ICP) and brain oxygen monitors in place. Methods: Our consensus working group consisted of 42 experienced and actively practicing sTBI opinion leaders from six continents. Having previously established a protocol for the treatment of patients with ICP monitoring alone, we addressed patients who have a brain oxygen monitor in addition to an ICP monitor. The management protocols were developed through a Delphi-method-based consensus approach and were finalized at an in-person meeting. Results: We established three distinct treatment protocols, each with three tiers whereby higher tiers involve therapies with higher risk. One protocol addresses the management of ICP elevation when brain oxygenation is normal. A second addresses management of brain hypoxia with normal ICP. The third protocol addresses the situation when both intracranial hypertension and brain hypoxia are present. The panel considered issues pertaining to blood transfusion and ventilator management when designing the different algorithms. Conclusions: These protocols are intended to assist clinicians in the management of patients with both ICP and brain oxygen monitors but they do not reflect either a standard-of-care or a substitute for thoughtful individualized management. These protocols should be used in conjunction with recommendations for basic care, management of critical neuroworsening and weaning treatment recently published in conjunction with the Seattle International Brain Injury Consensus Conference.

Chuang YC, Meng E, **Chancellor M** and Kuo HC (2020). "Pain reduction realized with extracorporeal shock wave therapy for the treatment of symptoms associated with interstitial cystitis/bladder pain syndrome: A prospective, multicenter, randomized, double-blind, placebo-controlled study." *Neurourology and Urodynamics* 39(5): 1505-1514.

[Full Text](#)

*Department of Urology*

Aims: Extracorporeal shock wave therapy (ESWT) inhibited bladder inflammation and pain in preclinical studies. We assessed ESWT for the treatment of refractory interstitial cystitis/bladder pain syndrome (IC/BPS). Methods: This double-blind, randomized, placebo-controlled physician-initiated study enrolled 54 patients with IC/BPS. The patients were assigned to ESWT (N = 24; 2000 shocks, frequency of 3 Hz, and maximum total energy flow density 0.25 mJ/mm<sup>2</sup>) once a week for 4 weeks at suprapubic bladder area or placebo (N = 25; shock wave setting without energy transmission). The primary endpoint was the average changes in O'Leary-Sant symptom scores (OSS) between baseline and 4 weeks after treatment. Secondary endpoints included visual analog scale (VAS, 0-10) for pain, the average changes of variables in a 3-day voiding diary, and global response assessment of patient satisfaction. Results: At 4 weeks posttreatment, both groups were associated with a statistically significant decrease in OSS and VAS pain scale. However, there were no difference in mean change between ESWT vs placebo groups. A significantly higher proportion of patients on ESWT responded as improved in the VAS  $\geq 3$  vs placebo (P = .035). At 12 weeks posttreatment, improvement in the VAS  $\geq 3$  was 57.1% vs 19.0% (ESWT vs placebo; P = .011). The finding was associated with an improvement in frequency –  $1.0 \pm 2.3$  vs  $0.7 \pm 3.2$  (ESWT vs placebo; P = .065). No significant adverse events were found in either group. Conclusions: A reduction in pain was discovered in this trial assessing ESWT in patients with IC/BPS but OSS, which was the primary outcome parameter, was not improved.

Chun SG, Liao Z, Jeter MD, Chang JY, Lin SH, Komaki RU, **Guerrero TM**, Mayo RC, Korah BM, Koshy SM, Heymach JV, Koong AC and Skinner HD (2020). "Metabolic responses to metformin in inoperable early-stage non-small cell lung cancer treated with stereotactic radiotherapy: Results of a randomized phase II clinical trial." *American Journal of Clinical Oncology* 43(4): 231-235.

[Full Text](#)

*Department of Radiation Oncology*

Background: Metformin reduces glucose uptake in physiologic tissues and has been shown to affect non-small cell lung cancer (NSCLC) metabolism. We hypothesized that positron emission tomography (PET) scans could detect the impact of metformin on glucose uptake in NSCLC and we sought to test this hypothesis in a prospective clinical trial. Materials and Methods: A single-blinded phase II clinical trial was performed with



subjects randomized 6:1 to 3 to 4 weeks of metformin versus placebo for inoperable early-stage NSCLC. PET scans were performed at baseline, mid-treatment (after 2 wk study medication), and 6 months postradiation. The primary endpoint of the trial was tumor metabolic response to metformin by PERCIST before definitive radiation. Stereotactic body radiotherapy to 50 Gy in 4 fractions was used for peripheral tumors and 70 Gy in 10 fractions for central tumors. Results: There were 14 subjects randomized to the metformin and 1 to placebo. Histologies were 60% adenocarcinoma, 33.3% squamous cell carcinoma, and 6.7% poorly differentiated carcinoma. At mid-treatment PET scan, 57% of subjects randomized to metformin met PERCIST criteria for metabolic response, of which 75% had progressive metabolic disease and 25% had partial metabolic response, whereas the placebo subject had stable metabolic disease. At 6 months, the metformin arm had 69% complete metabolic response, 23% partial metabolic response and 1 progressive metabolic disease, and the subject treated with placebo had a complete metabolic response. There were no CTCAE grade  $\geq 3$  toxicities. Conclusions: Despite low accrual, majority of subjects treated with metformin had metabolic responses by PERCIST criteria on PET imaging. Contrary to the effect of metformin on most physiologic tissues, most tumors had increased metabolic activity in response to metformin.

Damiani G, Grossi E, Berti E, Conic RRZ, **Radhakrishna U**, Pacifico A, Bragazzi NL, Piccinno R and Linder D (2020). "Artificial neural networks allow response prediction in squamous cell carcinoma of the scalp treated with radiotherapy." Journal of the European Academy of Dermatology and Venereology 34(6): 1369-1373.

[Request Form](#)

*Department of Obstetrics & Gynecology*

Background: Epithelial neoplasms of the scalp account for approximately 2% of all skin cancers and for about 10-20% of the tumours affecting the head and neck area. Radiotherapy is suggested for localized cutaneous squamous cell carcinomas (cSCC) without lymph node involvement, multiple or extensive lesions, for patients refusing surgery, for patients with a poor general medical status, as adjuvant for incompletely excised lesions and/or as a palliative treatment. To date, prognostic risk factors in scalp cSCC patients are poorly characterized. Objective: To identify patterns of patients with higher risk of postradiotherapy recurrence. Methods: A retrospective observational study was performed on scalp cSCC patients with histological diagnosis who underwent conventional radiotherapy (50-120 kV) (between 1996 and 2008, follow-up from 1 to 140 months, median 14 months). Out of the 79 enrolled patients, 22 (27.8%) had previously undergone a surgery. Two months after radiotherapy, 66 (83.5%) patients achieved a complete remission, 6 (7.6%) a partial remission, whereas 2 (2.5%) proved non-responsive to the treatment and 5 cases were lost to follow-up. Demographical and clinical data were preliminarily analysed with classical descriptive statistics and with principal component analysis. All data were then re-evaluated with a machine learning-based approach using a 4th generation artificial neural networks (ANNs)-based algorithm. Results: Artificial neural networks analysis revealed four scalp cSCC profiles among radiotherapy responsive patients, not previously described: namely, (i) stage T2 cSCC type, aged 70-80 years; (ii) frontal cSCC type, aged <70 years; (iii) non-recurrent nodular or nodulo-ulcerated, stage T3 cSCC type, of the vertex and treated with >60 Grays (Gy); and (iv) flat, occipital, stage T1 cSCC type, treated with 50-59 Gy. The model uncovering these four predictive profiles displayed 85.7% sensitivity, 97.6% specificity and 91.7% overall accuracy. Conclusions: Patient profiling/phenotyping with machine learning may be a new, helpful method to stratify patients with scalp cSCCs who may benefit from a RT-treatment.

DiMugno AN, **Hajj-Hussein I**, Othmani AE, Stasch J, Sayeed Z and El-Othmani MM (2020). "Chronic kidney disease impact on total joint arthroplasty outcomes: A national inpatient sample-based study." Journal of Orthopaedic Surgery 28(3).

[Full Text](#)

*Department of Foundational Medical Studies (OU)*

Introduction: In the United States, chronic kidney disease (CKD) affects roughly 11% of the population or 19.2 million people. As the prevalence of CKD and demand for total joint arthroplasty (TJA) continue to rise, it is critical to assess the impact of CKD on postoperative clinical and economic outcomes. Methods: Discharge data from 2006 to 2011 National Inpatient Sample were used for this study. A total of 851,150 TJA patients were divided into three cohorts: group 1 included no CKD, CKD stage I, and CKD stage II; group 2 included CKD stage III and stage IV; group 3 included CKD stage V. Inverse probability of treatment weighting/propensity score weighting was used to predict outcome variables as a function of age, sex, and

Elixhauser comorbidities. Patients were compared against group I for in-hospital postoperative outcomes. Results: Stage III/IV CKD patients undergoing primary TJA had higher odds of any complication (odds ratio (OR), 2.63;  $p < 0.0001$ ), longer length of stay (LOS), and higher total charge (LOS, 4.34 vs. 3.48 days; total charge, US\$56,003 vs. US\$46,115;  $p < 0.0001$ ) when compared to patients with no CKD/stage I or II. Similarly, stage V CKD patients undergoing primary TJA had higher odds of any complication (OR, 1.64;  $p < 0.0001$ ), longer LOS, and higher total charges (LOS, 5.81 vs. 3.48 days; total charge, US\$59,869 vs. US\$46,115) than their counterparts with no CKD/stage I or II CKD. Discussion: Our results indicate that stage III, IV, or V CKD, compared with those with no CKD, stage I or II patients are at a greater risk for postoperative complications and consume more resources following TJA.

**Diokno AC** and **Devries JM** (2020). "The impact of COVID-19 on urologic practice, medical education, and training." *International Urology and Nephrology* 52(7): 1195-1198.

[Full Text](#)

*Department of Pediatrics*

*Department of Urology*

Dombrowski D, **Long GW**, **Chan J** and **Brown OW** (2020). "Screening chest computed tomography is indicated in all patients with abdominal aortic aneurysm." *Annals of Vascular Surgery* 65: 190-195.

[Request Form](#)

*OUWB Medical Student Author*

*Department of Surgery*

Background: This study quantifies the prevalence of thoracic aortic aneurysm (TAA) in patients with known abdominal aortic aneurysm (AAA). Methods: A retrospective review of patients with a diagnosis of AAA from January 2007 to December 2017 within Beaumont Health was undertaken. Radiology reports of abdominal ultrasound, computed tomography (CT), and magnetic resonance imaging were reviewed to identify patients with AAA. Of these, patients with a chest CT scan performed within 180 days before or after abdominal imaging were reviewed for diagnosis of TAA. AAA was defined as aortic diameter  $\geq 30$  mm, and TAA was defined as aortic diameter  $\geq 40$  mm. Results: The cohort included 218 patients with a chest CT scan performed within 180 days of initial diagnosis of AAA. The mean age at diagnosis of AAA was 74 years; 82 (37.6%) were women. There were no differences between men and women in the prevalence of diabetes mellitus, hypertension, hyperlipidemia, chronic obstructive pulmonary disease, tobacco use, and family history of aortic aneurysm. Forty concomitant AAAs and TAAs were detected, for an overall prevalence of 18.3%, with no significant difference between men and women (15% vs. 24%,  $P = 0.07$ ). Women were diagnosed with AAA at an older age than men (76 vs. 73 years,  $P = 0.01$ ) and had lower body mass index (23 vs. 26,  $P = 0.01$ ), smaller maximum AAA diameter (36.5 vs. 40 mm,  $P = 0.03$ ), and larger TAA (47 vs. 41 mm,  $P = 0.01$ ). TAAs were classified by location: 47.5% (19/40), ascending; 32.5% (13/40), descending; and 20% (8/40), ascending and descending. Six patients had thoracoabdominal aortic aneurysms: 2 patients with extent II, 2 with extent III, and 2 with extent V. These patients were included in the overall analysis; excluding them resulted in a rate of concomitant AAA/TAA of 16%. No significant differences were noted in comorbidities or AAA size between the TAA/AAA and AAA only groups. Conclusions: TAAs appear to occur concomitantly with AAAs with significant frequency. Women appear to have larger TAA diameter than men, despite smaller sized AAA at diagnosis. These data support creating guidelines for obtaining a screening chest CT scan in all patients diagnosed with an AAA.

Driscoll JA, Lubbe R, Jakus AE, Chang K, Haleem M, Yun C, Singh G, Schneider AD, Katchko KM, Soriano C, Newton M, Maerz T, Li X, **Baker K**, Hsu WK, Shah RN, Stock SR and Hsu EL (2020). "3D-printed ceramic-demineralized bone matrix hyperelastic bone composite scaffolds for spinal fusion." *Tissue Engineering - Part A* 26(3-4): 157-166.

[Request Form](#)

*Department of Orthopaedic Surgery*

Although numerous spinal biologics are commercially available, a cost-effective and safe bone graft substitute material for spine fusion has yet to be proven. In this study, "3D-Prints" containing varying volumetric ratios of hydroxyapatite (HA) and human demineralized bone matrix (DBM) in a poly(lactide-co-glycolide) elastomer were three-dimensional (3D) printed into scaffolds to promote osteointegration in rats, with an end goal of spine fusion without the need for recombinant growth factor. Spine fusion was evaluated

by manual palpation, and osteointegration and de novo bone formation within scaffold struts were evaluated by laboratory and synchrotron microcomputed tomography and histology. The 3:1 HA:DBM composite achieved the highest mean fusion score and fusion rate (92%), which was significantly greater than the 3D printed DBM-only scaffold (42%). New bone was identified extending from the host transverse processes into the scaffold macropores, and osteointegration scores correlated with successful fusion. Strikingly, the combination of HA and DBM resulted in the growth of bone-like spicules within the DBM particles inside scaffold struts. These spicules were not observed in DBM-only scaffolds, suggesting that de novo spicule formation requires both HA and DBM. Collectively, our work suggests that this recombinant growth factor-free composite shows promise to overcome the limitations of currently used bone graft substitutes for spine fusion. Currently, there exists a no safe, yet highly effective, bone graft substitute that is well accepted for use in spine fusion procedures. With this work, we show that a three-dimensional printed scaffold containing osteoconductive hydroxyapatite and osteoinductive demineralized bone matrix that promotes new bone spicule formation, osteointegration, and successful fusion (stabilization) when implemented in a preclinical model of spine fusion. Our study suggests that this material shows promise as a recombinant growth factor-free bone graft substitute that could safely promote high rates of successful fusion and improve patient care.

Epley C, **Berger D**, **Sawyer K** and Burla M (2020). "Change in resident resuscitation-specific confidence and anxiety levels from a novel rotation." Critical Care Medicine 48(1): 718.

[Full Text](#)

*Department of Emergency Medicine*

Farley KX, Aizpuru M, **Boden SH**, Wagner ER, Gottschalk MB and Daly CA (2020). "Avocado-related knife injuries: Describing an epidemic of hand injury." American Journal of Emergency Medicine 38(5): 864-868.

[Request Form](#)

*OUWB Medical Student Author*

Introduction: Recent media reports have described knife injuries sustained while preparing avocados; however, this rise has not been reported in the literature. The purpose of this study is to describe, quantify, and trend emergency department (ED) encounters associated with avocado-related knife injuries. Methods: The National Electronic Injury Surveillance System (NEISS) was queried for avocado-related knife injuries from 1998 to 2017. Patient demographic and injury data was collected and analyzed to describe trends in incidence, patient demographics, and injury patterns associated with an ED encounter for an avocado-related knife injury. Results: There were an estimated 50,413 (95% Confidence Interval: 46,333-54,492) avocado-related knife injuries from 1998 to 2017. The incidence of avocado-related knife injuries increased over this time period (1998-2002=3143; 2013-2017=27,059). This increase correlated closely with a rise in avocado consumption in the U.S. (Pearson's Correlation: 0.934,  $p < 0.001$ ) Women comprised 80.1% of injuries. The most common demographic injured were 23 to 39-year old females (32.7%), while the least common was males under the age of 17 (0.9%). Most ED presentations occurred on Saturdays (15.9%) or Sundays (19.9%) and the majority occurred during the months of April through July (45.6%). Injuries were much more common on the left (and likely non-dominant) hand. Conclusion: Avocado-related knife injuries are a preventable cause of hand injury. The incidence has risen significantly in recent years, possibly due to an increased consumption of avocados in the United States. Education on safe avocado preparation techniques and public safety initiatives, such as warning labels, could help prevent serious injuries in the future.

Fatemi S and **Fullmer J** (2020). "Monoclonal brachyury staining in hemangioblastoma." Journal of Neuropathology and Experimental Neurology 79(6): 705.

[Request Form](#)

*Department of Pathology*

Ferraro RA, van Rosendael AR, Lu Y, Andreini D, Al-Mallah MH, Cademartiri F, **Chinnaiyan K**, Chow BJW, Conte E, Cury RC, Feuchtner G, de Araujo Goncalves P, Hadamitzky M, Kim YJ, Leipsic J, Maffei E, Marques H, Plank F, Pontone G, **Raff GL**, Villines TC, Lee SE, Al'Aref SJ, Baskaran L, Cho I, Danad I, Gransar H, Budoff MJ, Samady H, Stone PH, Virmani R, Narula J, Berman DS, Chang HJ, Bax JJ, Min JK, Shaw LJ and Lin FY (2020). "Non-obstructive high-risk plaques

increase the risk of future culprit lesions comparable to obstructive plaques without high-risk features: The ICONIC study." [European Heart Journal of Cardiovascular Imaging](#). ePub Ahead of Print.

[Full Text](#)

*Department of Internal Medicine*

Aims: High-risk plaque (HRP) and non-obstructive coronary artery disease independently predict adverse events, but their importance to future culprit lesions has not been resolved. We sought to determine in patients prior to confirmed acute coronary syndrome (ACS) the association between lesion percent diameter stenosis (%DS), and the absolute number and prevalence of HRP. The secondary objective was to examine the relative importance of non-obstructive HRP in future culprit lesions. Methods and Results: Within the ICONIC study, a nested case-control study of patients undergoing coronary computed tomographic angiography (coronary CT), we included ACS cases with culprit lesions confirmed by invasive coronary angiography and coregistered to baseline coronary CT. Quantitative CT was used to evaluate obstructive ( $\geq 50\%$ ) and non-obstructive ( $< 50\%$ ) diameter stenosis, with HRP defined as  $\geq 2$  features of spotty calcification, positive remodelling, or low-attenuation plaque at baseline. A total of 234 patients with downstream ACS over 54 (interquartile range 5-525.5) days exhibited 198/898 plaques with HRP on coronary CT. While HRP was less prevalent in non-obstructive (19.7%, 161/819) than obstructive lesions (46.8%, 37/79,  $P < 0.001$ ), non-obstructive plaque comprised 81.3% (161/198) of HRP lesions overall. Among the 128 patients with identifiable culprit lesion precursors, the adjusted hazard ratio (HR) was 1.85 [95% confidence interval (CI) 1.26-2.72] for HRP, with no interaction between %DS and HRP ( $P = 0.82$ ). Compared to non-obstructive HRP lesions, obstructive lesions without HRP exhibited a non-significant HR of 1.41 (95% CI 0.61-3.25,  $P = 0.42$ ). Conclusions: While HRP is more prevalent among obstructive lesions, non-obstructive HRP lesions outnumber those that are obstructive and confer risk clinically approaching that of obstructive lesions without HRP.

**Fischgrund JS**, Rhyne A, Macadaeg K, Moore G, Kamrava E, Yeung C, Truumees E, Schaufele M, Yuan P, DePalma M, Anderson DG, Buxton D, Reynolds J and **Sikorsky M** (2020). "Long-term outcomes following intraosseous basivertebral nerve ablation for the treatment of chronic low back pain: 5-year treatment arm results from a prospective randomized double-blind sham-controlled multi-center study." [European Spine Journal](#). ePub Ahead of Print.

[Full Text](#)

*Department of Anesthesiology*

*Department of Orthopaedic Surgery*

Background: Damaged or degenerated vertebral endplates are a significant cause of vertebrogenic chronic low back pain (CLBP). Modic changes are one objective MRI biomarker for these patients. Prior data from the treatment arm of a sham-controlled, RCT showed maintenance of clinical improvements at 2 years following ablation of the basivertebral nerve (BVN). This study reports 5-year clinical outcomes. Methods: In total, 117 US patients were treated successfully with BVN ablation. Patient-reported outcomes of ODI, VAS, postablation treatments, and patient satisfaction were collected at a minimum of 5-years following BVN ablation. Primary outcome was mean change in ODI. Comparisons between the postablation and baseline values were made using an analysis of covariance with alpha 0.05. Results: Of the 117 US treated patients 100 (85%) were available for review with a mean follow-up of 6.4 years (5.4-7.8 years). Mean ODI score improved from 42.81 to 16.86 at 5-year follow-up, a reduction of 25.95 points ( $p < 0.001$ ). Mean reduction in VAS pain score was 4.38 points (baseline of 6.74,  $p < 0.001$ ). In total, 66% of patients reported a  $> 50\%$  reduction in pain, 47% reported a  $> 75\%$  reduction in pain, and 34% of patients reported complete pain resolution. Composite responder rate using thresholds of  $\geq 15$ -point ODI and  $\geq 2$ -point VAS for function and pain at 5 years was 75%. Conclusion: CLBP patients treated with BVN ablation exhibit sustained clinical improvements in function and pain with high responder rates at a mean of 6.4 years following treatment. BVN ablation is a durable, minimally invasive treatment for vertebrogenic CLBP.

Foster CC, Seiwert TY, MacCracken E, Blair EA, Agrawal N, Melotek JM, Portugal L, **Brisson RJ**, Gooi Z, Spiotto MT, Vokes EE and Haraf DJ (2020). "Dose and volume de-escalation for human papillomavirus-positive oropharyngeal cancer is associated with favorable posttreatment functional outcomes." [International Journal of Radiation Oncology Biology Physics](#). ePub Ahead of Print.

[Request Form](#)

*OUWB Medical Student Author*

Purpose: To report functional outcomes for patients with human papillomavirus–positive oropharyngeal cancer treated on a phase 2 protocol of risk- and induction chemotherapy response-adapted dose and volume de-escalated radiation therapy (RT)/chemoradiation (CRT). Methods and Materials: Patients were stratified as low risk (LR) or high risk (HR) according to T/N-stage and smoking history. Induction chemotherapy was followed by radiographic response assessment. LR patients with  $\geq 50\%$  response received 50 Gy RT (RT50), whereas LR patients with 30% to 50% response or HR patients with  $\geq 50\%$  response received 45 Gy CRT (CRT45). All other patients received 75 Gy CRT (CRT75) with RT limited to the first echelon of uninvolved nodes. Pre- and post-RT/CRT modified barium swallow studies were performed. Percutaneous endoscopic gastrostomy (PEG) tube placement, body mass index (BMI), and narcotic use were recorded. Statistical comparisons used linear or logistic regression, the Mann–Whitney U test, the  $\chi^2$  test, or Fisher's exact test as appropriate. Results: Twenty-eight LR and 34 HR patients were enrolled; 49 completed RT50/CRT45 and 11 completed CRT75. PEG-tube dependency at the end of RT/CRT and 3 months post-RT/CRT significantly differed according to risk and treatment groups (all  $P < .05$ ). Treatment intensity was independently associated with 3-month PEG status while adjusting for risk group ( $P = .002$ ). The CRT75 group had a median  $-8.42\%$  change from baseline BMI at 1 year post-RT/CRT versus  $-2.54\%$  for the RT50/CRT45 group ( $P = .01$ ). At the end of RT/CRT, CRT75 patients were less likely to tolerate a normal diet, more likely to have swallowing performance status scale scores  $\geq 4$ , more likely to have Rosenbek's penetration-aspiration scores  $\geq 7$ , more likely to have developed trismus, and more likely to require narcotics  $\geq 2$  months (all  $P < .05$ ). Conclusions: Induction chemotherapy followed by risk- and response-adapted dose and volume de-escalated RT/CRT is associated with clinically meaningful functional outcomes including (1) improved swallowing function, (2) higher BMI, and (3) shorter narcotic use for patients receiving de-escalation.

**Franklin BA**, Myers J and Kokkinos P (2020). "Importance of lifestyle modification on cardiovascular risk reduction: Counseling strategies to maximize patient outcomes." *Journal of Cardiopulmonary Rehabilitation and Prevention* 40(3): 138-143.

[Full Text](#)

*Department of Internal Medicine*

This commentary builds on the unhealthy lifestyle habits, population health, risk factors as harbingers of cardiovascular disease, current provider counseling practices, assessing patient readiness to change, and research-based interventions to facilitate behavior change (eg, the 5A's, motivational interviewing, and overcoming inertia with downscaled goals).

**Franklin BA**, Thompson PD, Al-Zaiti SS, Albert CM, Hivert MF, Levine BD, Lobelo F, Madan K, Sharrief AZ, Eijsvogels TMH, Council Lifestyle Cardiometab H, Council Cardiovasc Stroke N and Council Clinical Cardiology S (2020).

"Exercise-related acute cardiovascular events and potential deleterious adaptations following long-term exercise training: Placing the risks into perspective - An update: A scientific statement from the American Heart Association." *Circulation* 141(13): E705-E736.

[Full Text](#)

*Department of Internal Medicine*

Epidemiological and biological plausibility studies support a cause-and-effect relationship between increased levels of physical activity or cardiorespiratory fitness and reduced coronary heart disease events. These data, plus the well-documented anti-aging effects of exercise, have likely contributed to the escalating numbers of adults who have embraced the notion that "more exercise is better." As a result, worldwide participation in endurance training, competitive long distance endurance events, and high-intensity interval training has increased markedly since the previous American Heart Association statement on exercise risk. On the other hand, vigorous physical activity, particularly when performed by unfit individuals, can acutely increase the risk of sudden cardiac death and acute myocardial infarction in susceptible people. Recent studies have also shown that large exercise volumes and vigorous intensities are both associated with potential cardiac maladaptations, including accelerated coronary artery calcification, exercise-induced cardiac biomarker release, myocardial fibrosis, and atrial fibrillation. The relationship between these maladaptive responses and physical activity often forms a U- or reverse J-shaped dose-response curve. This scientific statement discusses the cardiovascular and health implications for moderate to vigorous physical

activity, as well as high-volume, high-intensity exercise regimens, based on current understanding of the associated risks and benefits. The goal is to provide healthcare professionals with updated information to advise patients on appropriate preparticipation screening and the benefits and risks of physical activity or physical exertion in varied environments and during competitive events.

Gaines R, Mando R, Tucker C, Assar S, **Hite A, Hanzel GS, Gallagher M**, Shannon F and **Abbas AE** (2020). "CT versus echocardiographic stroke volume index compared to invasively derived cardiac index to assess flow in patients with aortic stenosis." Journal of the American College of Cardiology 75(11): 1801.

[Full Text](#)

*Department of Internal Medicine*

*OUIB Medical Student Author*

Gaines R, Mando R, Tucker C, Assar S, **Hite A, Hanzel GS, Gallagher M**, Shannon F and **Abbas AE** (2020). "Echocardiographic vs. computed tomographic-derived energy loss index compared to invasive aortic valve area in aortic stenosis." Journal of the American College of Cardiology 75(11): 1802.

[Full Text](#)

*Department of Internal Medicine*

*OUIB Medical Student Author*

**Gallagher MJ**, Bloomingdale R, **Berman AD, Williamson BD, Dixon SR** and **Safian RD** (2020). "Strategic deployment of cardiology fellows-in-training using the Accreditation Council for Graduate Medical Education COVID-19 framework." Journal of the American Heart Association. ePub Ahead of Print.

[Request Form](#)

*Department of Internal Medicine*

Coronavirus disease 2019 (COVID-19) is a global pandemic affecting more than 3 million people in over 170 countries, resulting in more than 200,000 deaths; 35-40% of patients and deaths are in the United States. The COVID-19 crisis is placing an enormous burden on healthcare in the United States, including residency and fellowship training programs. The balance between mitigation, training and education, and patient care are the ultimate determinants of the role of cardiology fellows-in-training (FIT) during the COVID-19 crisis. On March 24, 2020 the Accreditation Council Graduate Medical Education (ACGME) issued a formal response to the pandemic crisis and described a framework for operation of GME programs. Guidance for deployment of cardiology FIT during the COVID-19 crisis is based on the principles of a medical mission, and adherence to preparation, protection, and support of our FIT. The purpose of this review is to describe our departmental strategic deployment of C-FIT using the Accreditation Council for Graduate Medical Education (ACGME) framework for pandemic preparedness.

Gandhi SD, **Cross J**, Siljander M, Fahs A, McQuivey K, **Fortin PT** and **Wiater PJ** (2020). "Dimensions of the lateral malleolar fossa and its potential violation with lateral distal fibular plate fixation." Orthopedics 43(3): E141-E146.

[Request Form](#)

*Department of Orthopaedic Surgery*

*OUIB Medical Student Author*

A previously undescribed pitfall of lateral distal fibular locking plates is the risk of violating the lateral malleolar fossa (MF). No previous study has described the dimensions of this fossa. All cases using a lateral distal fibular plate for a fibula fracture from December 2012 to December 2015 (n=365) at a single institution were reviewed. Screws that violated the medial fibular cortical density corresponding to the MF were identified as "at-risk" screws. Available preoperative computed tomography (CT) scans were reviewed (n=69) to measure MF dimensions. Of 365 patients, 115 (31.5%) patients had distal fibular screws at risk of MF violation. There were no significant differences between MF violation and non-violation groups in terms of age, sex, open fracture, syndesmotom fixation, and Weber classification. The MF dimensions were measured on CT scans. Mean height was 12.96 mm (SD, 2.09 mm; range, 9.0-17.3 mm). Mean width was 7.52 mm (SD, 1.37 mm; range, 4.2-10.4 mm). Mean depth was 8.32 mm (SD, 1.59 mm; range, 5.3-11.8 mm). Mean ratio of MF to total fibular width was 0.46 mm (SD, 0.07 mm; range, 0.3-0.65 mm). Mean MF to total fibular depth was 0.42 mm (SD, 0.07 mm; range, 0.28-0.58 mm). There was a difference in dimensions of patients with screws at risk of MF violation compared with those without (MF height: 13.77 vs 12.56, P=.02; MF width: 7.98



vs 7.30, P=.05; MF to fibula width ratio: 0.49 vs 0.44, P=.01; MF to fibula depth ratio: 0.43 vs 0.42, P=.05). The MF violation is a previously unreported but potentially prevalent pitfall of lateral distal fibular plate fixation. Surgeons should be aware of the MF size and exhibit caution when placing screws in the distal locking holes during fibula fixation.

Gandhi SD, Fahs AM, Wahlmeier ST, Louie P, Possley DR, **Khalil JG** and **Park DK** (2020). "Radiographic fusion rates following a stand-alone interbody cage versus an anterior plate construct for adjacent segment disease after anterior cervical discectomy and fusion." *Spine* 45(11): 713-717.

[Full Text](#)

*Department of Orthopaedic Surgery*

Study Design: Case-control. Objectives: The aim of this study was to evaluate fusion rates and compare a stand-alone cage construct with an anterior-plate construct in the setting revision anterior cervical discectomy and fusion (ACDF) for adjacent segment disease. Summary of background data: Anterior cervical discectomy and fusion are considered the criterion standard of surgical treatment for cervical myelopathy and radiculopathy. One common consequence is adjacent segment disease. Treatment of adjacent segment disease is complicated by the previous surgical implants, which may make application of an additional anterior cervical plate difficult. Stand-alone cage constructs obviate the need for removal or revision of prior implants in the setting of adjacent segment disease. Methods: All patients undergoing surgery for adjacent segment disease in a 2-year period were identified and separated into groups based on implant construct. A control group of patients undergoing primary, single-level ACDF were selected from during the same 2-year period. Demographic variables, fusion rate, and reoperation rate were compared between groups. Continuous variables were compared using Student t test, fusion, and revision rates were compared using Pearson chi test. Results: Patients undergoing primary ACDF had lower age and American Society of Anesthesia score as well as shorter operative time. Fusion rate was higher for primary ACDF compared to all patients who underwent ACDF for adjacent segment disease (95% vs. 74%). When compared to primary ACDF, patients with a stand-alone cage construct had significantly lower fusion rate (69% vs. 95%) and higher reoperation rate (14% vs. 0%). There were no significant differences in anterior plate construct versus stand-alone cage construct in terms of fusion and reoperation. Conclusion: Symptomatic adjacent segment disease can be managed surgically with either revision anterior plating or a stand-alone cage constructs, although our results raise questions regarding a difference in fusion rates that requires further investigation.

**Ghandour M**, Hashim A, Yassin AS, A EL, Shereef H, Mohamed K, Elshekhdreis A and **Singer D** (2020). "Progressive multifocal leukoencephalopathy secondary to adalimumab." *American Journal of Therapeutics*. ePub Ahead of Print.

[Full Text](#)

*Department of Neurology*

*OUIB Medical Student Author*

**Ghiam BK**, Wood EH, Thanos A and **Randhawa S** (2020). "CRB1 related retinal degeneration with novel mutation." *American Journal of Ophthalmology Case Reports* 18: 100699.

[Full Text](#)

*Department of Ophthalmology*

*OUIB Medical Student Author*

Purpose: To describe novel and previously unreported genetic mutations in the CRB1 gene in a patient with retinal dystrophy. To increase the genotype-phenotype understanding of CRB1-related retinal degenerative diseases and describe patients' response to therapy. Observations: Patient was evaluated for progressive loss of central and peripheral vision. Fundus photography, fundus autofluorescence (FAF), fluorescein angiography (FA), and ocular-coherence tomography (OCT) were used in the evaluation. Genetic screening was performed to explore underlying mutations. Genetics revealed a previously reported, pathogenic variant in the CRB1 gene (c.2842+5G > A), and a novel mutation (c.4014T > A) whose clinical significance is uncertain due to the absence of conclusive evidence. This case is phenotypically unique in that CME was refractory to therapy, while CME in CRB1 related maculopathy typically responds well to treatment. Conclusions and importance: This study adds a breadth of phenotypic understanding to genetic analysis in CRB1 related retinal degenerative conditions. The newly described CRB1 variant mutation c.4014T > A may portend a poor prognosis for CME responsiveness to therapy. Genetic testing in an otherwise unexplained

CME event may be useful to identify underlying CRB1 variants and reveal genotype-phenotype correlations, which may alter the treatment plan and prognosis.

**Goldstein JA** and Kern MJ (2020). "Hemodynamics of constrictive pericarditis and restrictive cardiomyopathy." *Catheterization and Cardiovascular Interventions* 95(6): 1240-1248.

[Full Text](#)

*Department of Internal Medicine*

Constrictive pericarditis (CP) and restrictive cardiomyopathy (RCM) are indolent disabling diseases of diastolic function. The two conditions share common pathophysiologic features, resulting in similar and overlapping clinical presentations, echocardiographic findings, and hemodynamic characteristics. However, their clinical course differs, as CP is surgically curable whereas RCM is a chronic condition managed medically. Separating these two entities is based on delineation of anatomic and physiologic derangements employing multimodality hemodynamic interrogation by advanced imaging techniques (Echo-Doppler, CT, and especially MRI) combined with sophisticated invasive hemodynamics.

Gomez-Rojas O, Hafeez A, Gandhi N, **Berghea R** and **Halalau A** (2020). "Bilateral vertebral artery dissection: A case report with literature review." *Case Reports in Medicine* 8180926: 1-16.

[Full Text](#)

*Department of Internal Medicine*

Vertebral artery dissection (VAD) is a rare cause of ischemic stroke in young patients. The largely nonspecific symptoms and delayed presentation pose a serious diagnostic challenge. Medical management with either anticoagulation or antiplatelet therapy is recommended, but there are no reports of successful dual therapy. We report a case of spontaneous bilateral vertebral artery dissections (VADs) treated with both anticoagulation and antiplatelet therapy and a literature review on clinical presentation and the current medical and surgical management options. A 37-year-old healthy female presented to the emergency department with worsening neck pain and headache for two weeks despite over-the-counter medication, block therapy, yoga, and deep tissue neck massage. She denied any trauma but admitted to multiple roller coaster rides over the past few months. CT angiography was concerning for VADs, and MRI brain revealed multiple strokes in the left posterior inferior cerebellar artery (PICA) territory. Cerebral arteriography confirmed the diagnosis of VADs. The patient was initiated on warfarin, along with atorvastatin and aspirin. She was discharged home with no complications and followed up with neurology as an outpatient. MR angiography after three months revealed complete resolution of the dissection. The patient did not report any bleeding complications from dual therapy.

**Graham SF**, Turkoglu O, **Yilmaz A**, Ustun I, Ugur Z, Bjornthal T, Han BS, Mandal R, Wishart D and **Bahado-Singh RO** (2020). "Targeted metabolomics highlights perturbed metabolism in the brain of autism spectrum disorder sufferers." *Metabolomics* 16(59).

[Full Text](#)

*Department of Obstetrics & Gynecology*

Introduction: Autism spectrum disorder (ASD) is a group of neurodevelopmental disorders characterized by deficiencies in social interactions and communication, combined with restricted and repetitive behavioral issues. Objectives: As little is known about the etiopathophysiology of ASD and early diagnosis is relatively subjective, we aim to employ a targeted, fully quantitative metabolomics approach to biochemically profile post-mortem human brain with the overall goal of identifying metabolic pathways that may have been perturbed as a result of the disease while uncovering potential central diagnostic biomarkers. Methods: Using a combination of <sup>1</sup>H NMR and DI/LC-MS/MS we quantitatively profiled the metabolome of the posterolateral cerebellum from post-mortem human brain harvested from people who suffered with ASD (n = 11) and compared them with age-matched controls (n = 10). Results: We accurately identified and quantified 203 metabolites in post-mortem brain extracts and performed a metabolite set enrichment analyses identifying 3 metabolic pathways as significantly perturbed (p < 0.05). These include Pyrimidine, Ubiquinone and Vitamin K metabolism. Further, using a variety of machine-based learning algorithms, we identified a panel of central biomarkers (9-hexadecenoylcarnitine (C16:1) and the phosphatidylcholine PC ae C36:1) capable of discriminating between ASD and controls with an AUC = 0.855 with a sensitivity and specificity equal to 0.80 and 0.818, respectively. Conclusion: For the first time, we report the use of a multi-

platform metabolomics approach to biochemically profile brain from people with ASD and report several metabolic pathways which are perturbed in the diseased brain of ASD sufferers. Further, we identified a panel of biomarkers capable of distinguishing ASD from control brains. We believe that these central biomarkers may be useful for diagnosing ASD in more accessible biomatrices.

**Gupta R**, Sheng IY, Barata PC and Garcia JA (2020). "Non-metastatic castration-resistant prostate cancer: Current status and future directions." Expert Review Anticancer Therapy 20(6): 1-9.

[Request Form](#)

*OUWB Medical Student Author*

Introduction: The emergence of novel hormonal therapies and the increase availability of sensitive next-generation imaging techniques has significantly changed the management of recurrent prostate cancer. Areas Covered: In this review, we summarize the definition, diagnosis, treatment, and ongoing clinical trials in non-metastatic castration resistant prostate cancer (M0CRPC). We have also discussed the role of newer imaging modalities in the detection of advanced prostate cancer. Expert Opinion: M0CRPC is a disease state in prostate cancer when serologic progression (PSA only disease) occurs despite castrated levels of testosterone and imaging shows no evidence of metastasis. With the availability of next-generation imaging, more patients are migrating from M0CRPC to mCRPC space. This stage migration impacts the treatment options currently available in clinical practice and requires the integration of novel imaging in prospective studies moving forward. Until that data become available men with M0CRPC should be considered for therapy with any of these three novel oral AR inhibitors, with a positive impact in metastasis-free and overall survival. Treatment selection should be based on Quality of Life, side effects, and drug-drug interactions.

Haight M, Bahner I, Belovich AL, Bonaminio G, Brennenman A, Brooks WS, Chinn C, El-Sawi N, Haudek SB, **McAuley RJ**, Rowe R, Slivkoff MD and Vari RC (2020). "How is health science education tackling the opioid crisis?" Medical Science Educator June 2020.

[Full Text](#)

*Department of Foundational Medical Studies (OU)*

**Haines DE** (2020). "A paradigm shift to address occupational health risks in the EP laboratory." Heart Rhythm 17(5): 681-682.

[Full Text](#)

*Department of Internal Medicine*

Hamera J, Talia N, **Sawyer K** and **Berger D** (2020). "Treatment for pulmonary embolism in a population with low-risk simplified pulmonary embolism." Critical Care Medicine 48(1): 128.

[Full Text](#)

*Department of Emergency Medicine*

Hanna NH, Schneider BJ, Temin S, Baker S, Jr., Brahmer J, Ellis PM, Gaspar LE, Haddad RY, Hesketh PJ, **Jain D**, **Jaiyesimi I**, Johnson DH, Leighl NB, Phillips T, Riely GJ, Robinson AG, Rosell R, Schiller JH, Singh N, Spigel DR, Stabler JO, Tashbar J and Masters G (2020). "Therapy for stage IV non-small-cell lung cancer without driver alterations: ASCO and OH (CCO) joint guideline update." Journal of Clinical Oncology 38(14): 1608-1632.

[Full Text](#)

*Department of Internal Medicine*

Purpose: The aim of this work is to provide evidence-based recommendations updating the 2017 ASCO guideline on systemic therapy for patients with stage IV non-small-cell lung cancer (NSCLC) without driver alterations. A guideline update for patients with stage IV NSCLC with driver alterations will be published separately. Methods: The American Society of Clinical Oncology and Ontario Health (Cancer Care Ontario) NSCLC Expert Panel made updated recommendations based on a systematic review of randomized controlled trials from December 2015 to 2019. Results: This guideline update reflects changes in evidence since the previous guideline update. Five randomized controlled trials provide the evidence base. Additional literature suggested by the Expert Panel is discussed. Recommendations: Recommendations apply to patients without driver alterations in epidermal growth factor receptor or ALK. For patients with high programmed death ligand 1 (PD-L1) expression (tumor proportion score [TPS]  $\geq$  50%) and non-squamous

cell carcinoma (non-SCC), the Expert Panel recommends single-agent pembrolizumab. Additional treatment options include pembrolizumab/carboplatin/pemetrexed, atezolizumab/carboplatin/paclitaxel/bevacizumab, or atezolizumab/carboplatin/nab-paclitaxel. For most patients with non-SCC and either negative (0%) or low positive (1% to 49%) PD-L1, the Expert Panel recommends pembrolizumab/carboplatin/pemetrexed. Additional options are atezolizumab/carboplatin/nab-paclitaxel, atezolizumab/carboplatin/paclitaxel/bevacizumab, platinum-based two-drug combination chemotherapy, or non-platinum-based two-drug therapy. Single-agent pembrolizumab is an option for low positive PD-L1. For patients with high PD-L1 expression (TPS  $\geq$  50%) and SCC, the Expert Panel recommends single-agent pembrolizumab. An additional treatment option is pembrolizumab/carboplatin/(paclitaxel or nab-paclitaxel). For most patients with SCC and either negative (0%) or low positive PD-L1 (TPS 1% to 49%), the Expert Panel recommends pembrolizumab/carboplatin/(paclitaxel or nab-paclitaxel) or chemotherapy. Single-agent pembrolizumab is an option in select cases of low positive PD-L1. Recommendations are conditional on the basis of histology, PD-L1 status, and/or the presence or absence of contraindications.

Hanni C, Petrovitch E, Ali M, Gibson W, Giuliano C, Holzhausen J, Makowski C, Pallisco A, **Patel N**, Sutter D, To L and Yost R (2020). "Outcomes associated with apixaban vs warfarin in patients with renal dysfunction." [Blood Advances](#) 4(11): 2366-2371.

[Full Text](#)

*OUWB Medical Student Author*

Apixaban in patients with impaired renal function is supported by limited data. Landmark clinical trials evaluating apixaban in patients with atrial fibrillation and/or acute venous thromboembolism excluded patients with creatinine clearance (CrCl)  $<25$  mL/min. This multicenter, retrospective chart review was conducted to evaluate the safety and effectiveness of apixaban compared with warfarin in patients with CrCl  $<25$  mL/min. Included patients were newly initiated on apixaban or warfarin for at least 45 days with a CrCl  $<25$  mL/min. Patients were evaluated for thrombosis and bleeding outcomes 6 months following initiation of anticoagulation. The primary outcome was the time to first bleeding or thrombosis event. A total of 128 patients met inclusion criteria in the apixaban group and 733 patients in the warfarin group. Time to first bleeding or thrombosis event was significantly different between the apixaban and warfarin groups. Cox proportional hazards model was conducted to control for potential confounding factors for the primary outcome. After controlling for atrial fibrillation and coronary artery bypass grafting, risk of thrombotic and bleeding events was lower in the apixaban group (hazard ratio, 0.47; 95% confidence interval, 0.25-0.92). There was not a statistical difference between time to thrombosis (83 days vs 54 days,  $P = .648$ ), rate of thrombosis (5.5% vs 10.3%,  $P = .08$ ), time to bleeding (46 days vs 54 days,  $P = .886$ ), or rate of bleeding (5.5% vs 10.9%,  $P = .06$ ). The severity of bleeding and thrombotic events was not different between groups. Apixaban may serve as a reasonable alternative compared with warfarin in patients with severe renal dysfunction.

Heier JS, Ho AC, Samuel MA, Chang T, Riemann CD, Kitchens JW, Slakter JS, Leiderman YI, Spencer R, **Williams GA**, Hickson-Curran SB, Keane M, Baldassarre JS and Prelude Study G (2020). "Safety and efficacy of subretinally administered palucorcel for geographic atrophy of age-related macular degeneration: Phase 2b study." [Ophthalmology Retina](#) 4(4): 384-393.

[Request Form](#)

*Department of Ophthalmology*

Purpose: To evaluate safety and successful use of a novel subretinal delivery system and suprachoroidal surgical approach and safety and activity of human umbilical tissue-derived cells (palucorcel) via a novel delivery system in patients with geographic atrophy (GA). Design: Multicenter, open-label phase 2b study. Participants: Participants were 55 to 90 years with GA secondary to age-related macular degeneration (AMD) and best-corrected visual acuity (BCVA) of 20/80 to 20/800. Exclusion criteria included neovascular AMD in the intervention eye, glaucoma with intraocular pressure of 25 mmHg or more, or other significant ophthalmologic conditions. Methods: Participants received a subretinal injection of palucorcel,  $3.0 \times 10^5$  cells in 50  $\mu$ l, using the custom-designed delivery system and surgical procedure. Main Outcome Measures: Safety assessments included treatment-emergent adverse events (AEs), immunologic assessments, and ophthalmologic evaluations. Efficacy was evaluated as change in mean number of BCVA letters from baseline, proportion of participants gaining 15 BCVA letters or more, and growth rate of GA lesions at 12

months. Results: Surgery and palucorcel administration were performed in 21 participants at 8 sites by 8 different surgeons. At baseline, median total area of GA was 13.4 mm<sup>2</sup> and median BCVA was 43 letters in the intervention eye. Eye-related AEs occurred in 76% of participants (16/21), including conjunctival hemorrhage (n = 5), retinal hemorrhage (n = 4), and vitreous floaters (n = 4). Most AEs were mild and resolved within 1 month. No serious AEs, no retinal detachment or perforation, and no significant changes in intraocular pressure occurred. At month 12, mean change in BCVA from baseline was -5.9 letters correct (standard deviation, 13.0 letters correct) in the intervention eye and -3.7 letters correct (standard deviation, 9.0 letters correct) in the fellow eye. No participants showed improvement of 15 letters or more in the intervention eye, and 3 participants lost more than 15 letters by month 1. No apparent effect of treatment was observed. Conclusions: Palucorcel was delivered successfully to the targeted subretinal site using a novel delivery system and suprachoroidal approach for most participants; however, improvement in GA area, retardation of growth, or visual acuity were not demonstrated.

**Hinckel BB**, Pratte EL, Baumann CA, Gowd AK, Farr J, **Liu JN**, Yanke AB, Chahla J and Sherman SL (2020).

"Patellofemoral cartilage restoration: A systematic review and meta-analysis of clinical outcomes." [American Journal of Sports Medicine](#) 48(7): 1756-1772.

[Full Text](#)

*Department of Orthopaedic Surgery*

*OUWB Medical Student Author*

Background: Many surgical options for treating patellofemoral (PF) cartilage lesions are available but with limited evidence comparing their results. Purpose: To determine and compare outcomes of PF cartilage restoration techniques. Study Design: Systematic review and meta-analysis. Methods: PRISMA (Preferred Reporting Items for Systematic Meta-Analyses) guidelines were followed by utilizing the PubMed, EMBASE, and Cochrane Library databases. Inclusion criteria were clinical studies in the English language, patient-reported outcomes after PF cartilage restoration surgery, and >12 months' follow-up. Quality assessment was performed with the Coleman Methodology Score. Techniques were grouped as osteochondral allograft transplantation (OCA), osteochondral autograft transfer (OAT), chondrocyte cell-based therapy, bone marrow-based therapy, and scaffolds. Results: A total of 59 articles were included. The mean Coleman Methodology Score was 71.8. There were 1937 lesions (1077 patellar, 390 trochlear, and 172 bipolar; 298 unspecified). The frequency of the procedures was as follows, in descending order: chondrocyte cell-based therapy (65.7%), bone marrow-based therapy (17.2%), OAT (8%), OCA (6.6%), and scaffolds (2.2%). When compared with the overall pooled lesion size (3.9 cm<sup>2</sup>; 95% CI, 3.5-4.3 cm<sup>2</sup>), scaffold (2.2 cm<sup>2</sup>; 95% CI, 1.8-2.5 cm<sup>2</sup>) and OAT (1.5 cm<sup>2</sup>; 95% CI, 1.1-1.9 cm<sup>2</sup>) lesions were smaller (P <.001), while chondrocyte cell-based therapy lesions were larger (4.7 cm<sup>2</sup>; 95% CI, 4.1-5.3 cm<sup>2</sup>; P =.039). Overall, the instability pool was 11.9%, and the anatomic risk factors pool was 32.1%. Statistically significant improvement was observed on at least 1 patient-reported outcome in chondrocyte cell-based therapy (83%), OAT (78%), OCA (71%), bone marrow-based therapy (64%), and scaffolds (50%). There were no significant differences between any group and the overall pooled change in International Knee Documentation Committee score (30.2; 95% CI, 27.4-32.9) and Lysholm score (25.2; 95% CI, 16.9-33.5). There were no significant differences between any group and the overall pooled rate in minor complication rate (7.6%; 95% CI, 4.7%-11.9%) and major complication rate (8.3%; 95% CI, 5.7%-12.0%); however, OCA had a significantly greater failure rate (22.7%; 95% CI, 14.6%-33.4%) as compared with the overall rate (6.8%; 95% CI, 4.7%-9.5%). Conclusion: PF cartilage restoration leads to improved clinical outcomes, with low rates of minor and major complications. There was no difference among techniques; however, failures were higher with OCA.

Hooper RC, Nasser JS, **Huetteman HE**, Mack SJ and Chung KC (2020). "Postoperative follow-up time and justification in prospective hand surgery research: A systematic review." [Journal of Hand Surgery European Volume](#) 1753193420931478.

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*OUWB Medical Student Author*

We systematically reviewed prospective studies for five hand procedures to analyse postoperative follow-up time, clinical or radiographic plateau, and whether the authors provide justification for times used. Demographic data, outcomes and mean follow-up were analysed. A total of 188 articles met our inclusion criteria. The mean postoperative follow-up time among these studies were carpal tunnel release, 21 months

(range 1.5-111); cubital tunnel release, 27 months (2.5-46); open reduction and internal fixation for the distal radius fracture, 24 months (3-120); thumb carpometacarpal joint arthroplasty, 64 months (8.5-228); and flexor tendon repair, 25 months (3-59). Authors provided justification for follow-up intervals in 10% of these reports. We conclude that most prospective clinical studies in hand surgery do not properly justify follow-up length. Clinically unnecessary follow-up is costly without much benefit. In prospective research, we believe justified postoperative follow-up is essential, based on expected time to detect clinical plateau, capture complications and determine the need for secondary surgery. Level of evidence: III.

Hsu J, Patel SN, **Wolfe JD**, Shah CP, Chen E, Jenkins TL, Wibbelsman TD, Obeid A, Mikhail M, Garg SJ, Ho AC, Chiang A, Spirn MJ and Vander JF (2020). "Effect of adjuvant topical dorzolamide-timolol vs placebo in neovascular age-related macular degeneration: A randomized clinical trial." *JAMA Ophthalmology*. ePub Ahead of Print.

[Full Text](#)

*Department of Ophthalmology*

Importance: Some eyes with neovascular age-related macular degeneration (AMD) have persistent exudation despite frequent intravitreal anti-vascular endothelial growth factor (VEGF) injections. Adjuvant therapies that further reduce edema may improve vision outcomes. Objective: To compare the short-term effect of topical dorzolamide-timolol vs placebo in eyes with neovascular AMD that have persistent exudation following intravitreal anti-VEGF injections. Design, Setting, and Participants: Randomized placebo-controlled clinical trial with enrollment from March 1, 2017, through October 30, 2018. Multicenter trial at 4 clinical sites in the United States. Sixty-three patients with neovascular AMD who had persistent exudation despite intravitreal anti-VEGF injections at 4-week, 5-week, or 6-week intervals. Interventions: Patients were randomized to use dorzolamide-timolol or artificial tears for the study duration. They continued to receive the same anti-VEGF drug at the same interval as the 2 visits before enrollment for 3 additional study visits. Main Outcomes and Measures: The primary outcome measure was change in mean central subfield thickness on optical coherence tomography from baseline to visit 3 (approximately 3 months). Secondary measures included change in mean maximum subretinal fluid height, mean maximum pigment epithelial detachment height, and mean visual acuity (VA). Results: This trial included 52 patients. All 27 patients (100%) assigned to dorzolamide-timolol and 23 of 25 (92%) assigned to placebo were analyzed for the primary outcome. Mean (SD) age was 78.4 (7) years, and 34 of 50 patients (68%) were women. Mean (SD) injections were 20.5 (14) (range, 4-58) before enrollment. Mean (SD) baseline logMAR VA was 0.361 (0.26) (approximate Snellen equivalent, 20/50). Comparing the dorzolamide-timolol with placebo group from baseline to visit 3, mean (SD) change in central subfield thickness (primary outcome) was -36.6 (54)  $\mu\text{m}$  vs 1.7 (52.3)  $\mu\text{m}$  (difference, 30.8; 95% CI, 0.3-61.3;  $P = .04$ ); secondary outcomes: Maximum PED height was -39.1 (65)  $\mu\text{m}$  vs 1.1 (16)  $\mu\text{m}$  (difference, 39.6; 95% CI, 9.6-69.6;  $P = .01$ ) and change in VA from baseline to visit 3 was -2.3 (5) vs 0.3 (1) letters (difference, 2.6 letters; 95% CI, -1.9 to 7.1 letters;  $P = .78$ ). Conclusions and Relevance: These findings suggest use of dorzolamide-timolol in patients with neovascular AMD with persistent exudation resulted in anatomic but not visual acuity improvements compared with placebo at approximately 3 months. Additional clinical trials with longer follow-up and larger sample sizes presumably would be needed to determine the role, if any, of dorzolamide-timolol in neovascular AMD.

Hung YC, Mohammed N, Kearns KN, Chen CJ, Starke RM, Kano H, Lee J, Mathieu D, Kaufmann AM, Wang WG, **Grills IS**, Cifarelli CP, Vargo J, Chytka T, Janouskova L, Feliciano CE, Rodriguez-Mercado R, Lunsford LD and Sheehan JP (2020). "Stereotactic radiosurgery for cavernous sinus versus noncavernous sinus dural arteriovenous fistulas: Outcomes and outcome predictors." *Neurosurgery* 86(5): 676-684.

[Request Form](#)

*Department of Radiation Oncology*

Background: Dural arteriovenous fistulas (DAVFs) can be categorized based on location. Objective: To compare stereotactic radiosurgery (SRS) outcomes between cavernous sinus (CS) and non-CS DAVFs and to identify respective outcome predictors. Methods: This is a retrospective study of DAVFs treated with SRS between 1988 and 2016 at 10 institutions. Patients' variables, DAVF characters, and SRS parameters were included for analyses. Favorable clinical outcome was defined as angiography-confirmed obliteration without radiological radiation-induced changes (RIC) or post-SRS hemorrhage. Other outcomes were DAVFs obliteration and adverse events (including RIC, symptomatic RIC, and post-SRS hemorrhage). Results: The overall study cohort comprised 131 patients, including 20 patients with CS DAVFs (15%) and 111 patients



with non-CS DAVFs (85%). Rates of favorable clinical outcome were comparable between the 2 groups (45% vs 37%,  $P = .824$ ). Obliteration rate after SRS was higher in the CS DAVFs group, even adjusted for baseline difference ( $OR = 4.189$ ,  $P = .044$ ). Predictors of favorable clinical outcome included higher maximum dose ( $P = .014$ ) for CS DAVFs. Symptomatic improvement was associated with obliteration in non-CS DAVFs ( $P = .005$ ), but symptoms improved regardless of whether obliteration was confirmed in CS DAVFs. Non-CS DAVFs patients with adverse events after SRS were more likely to be male ( $P = .020$ ), multiple arterial feeding fistulas ( $P = .018$ ), and lower maximum dose ( $P = .041$ ). Conclusion: After SRS, CS DAVFs are more likely to obliterate than non-CS ones. Because these 2 groups have different total predictors for clinical and radiologic outcomes after SRS, they should be considered as different entities.

**Huynh KA** and Chung KC (2020). "Using evidence for hand surgery: How to practice evidence-based hand surgery care." Hand Clinics 36(2): 137-144.

[Full Text](#)

*OUWB Medical Student Author*

Each step of the evidence-based practice process is critical and requires clear understanding for accurate application. To practice evidence-based care, providers must acquire a specific skillset that facilitates translation of a patient problem into an answerable research question. Additional requirements are understanding of electronic databases, critical appraisal of the available evidence, and integration of the findings to generate a specific, individualized treatment plan. Although this process is demanding, evidence-based practice is essential in the delivery of optimal patient care.

Imam Z, Odish F, Armstrong J, **Elassar H, Dokter J**, Langnas E and **Halalau A** (2020). "Independent correlates of hospitalization in 2040 patients with COVID-19 at a large hospital system in Michigan, United States." Journal of General Internal Medicine. ePub Ahead of Print.

[Full Text](#)

*OUWB Medical Student Author*

*Department of Internal Medicine*

Imam Z, Odish F, Gill I, O'Connor D, Armstrong J, **Vanood A, Ibrionke O**, Hanna A, **Ranski A** and **Halalau A** (2020). "Older age and comorbidity are independent mortality predictors in a large cohort of 1305 COVID-19 patients in Michigan, United States." Journal of Internal Medicine. ePub Ahead of Print.

[Full Text](#)

*Department of Internal Medicine*

*OUWB Medical Student Author*

Introduction: Higher comorbidity and older age have been reported as correlates of poor outcomes in COVID-19 patients worldwide; however, US data are scarce. We evaluated mortality predictors of COVID-19 in a large cohort of hospitalized patients in the United States. Design: Retrospective, multicenter cohort of inpatients diagnosed with COVID-19 by RT-PCR from 1 March to 17 April 2020 was performed, and outcome data evaluated from 1 March to 17 April 2020. Measures included demographics, comorbidities, clinical presentation, laboratory values and imaging on admission. Primary outcome was mortality. Secondary outcomes included length of stay, time to death and development of acute kidney injury in the first 48-h. Results: The 1305 patients were hospitalized during the evaluation period. Mean age was 61.0 +/- 16.3, 53.8% were male and 66.1% African American. Mean BMI was 33.2 +/- 8.8 kg m<sup>-2</sup>. Median Charlson Comorbidity Index (CCI) was 2 (1-4), and 72.6% of patients had at least one comorbidity, with hypertension (56.2%) and diabetes mellitus (30.1%) being the most prevalent. ACE-I/ARB use and NSAIDs use were widely prevalent (43.3% and 35.7%, respectively). Mortality occurred in 200 (15.3%) of patients with median time of 10 (6-14) days. Age > 60 (aOR: 1.93, 95% CI: 1.26-2.94) and CCI > 3 (aOR: 2.71, 95% CI: 1.85-3.97) were independently associated with mortality by multivariate analyses. NSAIDs and ACE-I/ARB use had no significant effects on renal failure in the first 48 h. Conclusion: Advanced age and an increasing number of comorbidities are independent predictors of in-hospital mortality for COVID-19 patients. NSAIDs and ACE-I/ARB use prior to admission is not associated with renal failure or increased mortality.

Jackson WC, Hartman HE, Dess RT, Birer SR, Soni PD, Hearn JWD, Reichert ZR, Kishan AU, Mahal BA, Zumsteg ZS, Efstathiou JA, Kaffenberger S, Morgan TM, Mehra R, Showalter TN, **Krauss DA**, Nguyen PL, Schipper MJ, Feng FY,

Sandler HM, Hoskin PJ, Roach M, 3rd and Spratt DE (2020). "Addition of androgen-deprivation therapy or brachytherapy boost to external beam radiotherapy for localized prostate cancer: A network meta-analysis of randomized trials." Journal of Clinical Oncology Jco1903217.

[Request Form](#)

*Department of Radiation Oncology*

Purpose: In men with localized prostate cancer, the addition of androgen-deprivation therapy (ADT) or a brachytherapy boost (BT) to external beam radiotherapy (EBRT) have been shown to improve various oncologic end points. Practice patterns indicate that those who receive BT are significantly less likely to receive ADT, and thus we sought to perform a network meta-analysis to compare the predicted outcomes of a randomized trial of EBRT plus ADT versus EBRT plus BT. Materials and Methods: A systematic review identified published randomized trials comparing EBRT with or without ADT, or EBRT (with or without ADT) with or without BT, that reported on overall survival (OS). Standard fixed-effects meta-analyses were performed for each comparison, and a meta-regression was conducted to adjust for use and duration of ADT. Network meta-analyses were performed to compare EBRT plus ADT versus EBRT plus BT. Bayesian analyses were also performed, and a rank was assigned to each treatment after Markov Chain Monte Carlo analyses to create a surface under the cumulative ranking curve. Results: Six trials compared EBRT with or without ADT (n = 4,663), and 3 compared EBRT with or without BT (n = 718). The addition of ADT to EBRT improved OS (hazard ratio [HR], 0.71 [95% CI, 0.62 to 0.81]), whereas the addition of BT did not significantly improve OS (HR, 1.03 [95% CI, 0.78 to 1.36]). In a network meta-analysis, EBRT plus ADT had improved OS compared with EBRT plus BT (HR, 0.68 [95% CI, 0.52 to 0.89]). Bayesian modeling demonstrated an 88% probability that EBRT plus ADT resulted in superior OS compared with EBRT plus BT. Conclusion: Our findings suggest that current practice patterns of omitting ADT with EBRT plus BT may result in inferior OS compared with EBRT plus ADT in men with intermediate- and high-risk prostate cancer. ADT for these men should remain a critical component of treatment regardless of radiotherapy delivery method until randomized evidence demonstrates otherwise.

**Jamil LH**, Naveed M, Agrawal D, Fujii-Lau LL, Al-Haddad M, Buxbaum JL, Fishman DS, Jue TL, Law JK, Lee JK, Qumseya BJ, Sawhney MS, Thosani N, Storm AC, Calderwood AH, Gurudu SR, Khashab MA, Yang J, Wani SB and Chair ASPC (2020). "ASGE guideline on minimum staffing requirements for the performance of GI endoscopy." Gastrointestinal Endoscopy 91(4): 723.

[Full Text](#)

*Department of Internal Medicine*

Efforts to increase patient safety and satisfaction, a critical concern for health providers, require periodic evaluation of all factors involved in the provision of GI endoscopy services. We aimed to develop guidelines on minimum staffing requirements and scope of practice of available staff for the safe and efficient performance of GI endoscopy. The recommendations in this guideline were based on a systematic review of published literature, results from a nationwide survey of endoscopy directors, along with the expert guidance of the American Society for Gastrointestinal Endoscopy (ASGE) Standards of Practice Committee members, ASGE Practice Operation Committee members, and the ASGE Governing Board.

**Jeon A, Trang A**, Muczinski T, **Karabon P** and **Khandhar P** (2020). "Questioning the FDA warning: Propofol use in the pediatric population." Critical Care Medicine 48(1): 594.

[Request Form](#)

*Department of Pediatrics*

*OUWB Medical Student Author*

*Department of Medical Studies*

Jindal V, Khoury J, Gupta R and **Jaiyesimi I** (2020). "Current status of chimeric antigen receptor T-cell therapy in multiple myeloma." American Journal of Clinical Oncology 43(5): 371-377.

[Full Text](#)

*Department of Internal Medicine*

Multiple myeloma (MM) is an incurable malignancy of plasma cells. Recently multiple new therapeutic options have been introduced which was able to improve overall survival but ultimately patient become refractory specifically in patients with poor cytogenetics. Therefore, novel therapeutic options like

immunotherapy are needed to improve outcomes. Chimeric antigen receptor (CAR) T-cell therapy is immunotherapy in which T cell are genetically engineered against a tumor-specific antigen and transfused back to the patient to mount major histocompatibility complex-independent cancer-specific immune response. The success of CAR T-cell therapy in lymphoid malignancies encouraged its development in MM. Most of the clinical studies target B-cell maturation antigen in relapsed refractory MM and relapse is the major issue. In this article, we will present the basics of CAR T-cell therapy, the most recent clinical and preclinical data, and we will discuss the future therapeutic realm of CAR T cells in MM.

Jindal V, Sahu KK, **Gaikazian S**, Siddiqui AD and **Jaiyesimi I** (2020). "Cancer treatment during COVID-19 pandemic." Medical Oncology 37(7): 58.

[Full Text](#)

*Department of Internal Medicine*

Currently world is fighting with global pandemic of coronavirus disease 2019 (COVID-19). At this time of uncertainty, oncologists are struggling to provide appropriate care to cancer patients. They have to weigh risk and benefit of giving cancer treatment vs chances of getting them infected with COVID-19. As cancer patients are immunocompromised and there are high chances of exposure during hospital visits and if they get infected, outcome can be fatal. So through the column of this article, we would like to provide basic guideline in management of cancer patients during COVID-19 pandemic.

John J, Garg L, Orosey M, **Desai T**, **Haines DE** and Wong WS (2020). "The effect of esophageal cooling on esophageal injury during radiofrequency catheter ablation of atrial fibrillation." Journal of Interventional Cardiac Electrophysiology 58(1): 43-50.

[Full Text](#)

*Department of Internal Medicine*

Introduction: Catheter ablation of atrial fibrillation (AF) may lead to collateral damage to the esophagus. We tested the hypothesis that luminal esophageal temperature (LET)-guided esophageal cooling might reduce the incidence of esophageal thermal lesions (ETL). Methods: Seventy-six patients from August 2015 to March 2017 with paroxysmal or persistent AF underwent a first-time catheter ablation procedure with or without LET-guided active esophageal cooling through an orogastric tube placed in the esophagus. Esophageal cooling occurred if and only if LET exceeded 0.5 degrees C from baseline while ablating the LA posterior wall. All patients underwent esophagogastroscopy the next day. Results: Of the 76 patients studied, 38 (50%) patients underwent esophageal cooling. Baseline characteristics of the non-cooled and cooled groups were comparable. Of these, 59% of patients had ETL. There was a non-significant trend for more severe lesions (grades 3, 4) in the non-cooled group (29% vs. 13.5%,  $p = 0.10$ ). Average power delivered on the left atrial posterior wall ( $27 \pm 1.8$  W vs.  $27 \pm 3.8$  W,  $p = 0.34$ ) and average force of contact (10.1 g vs. 9.8 g,  $p = 0.38$ ) were similar in both groups while more time was spent ablating on the posterior wall in the non-cooled group ( $24.6 \pm 7.3$  min vs.  $20.4 \pm 5.9$  min,  $p = 0.014$ ). In a multivariate analysis, esophageal cooling had no significant effect on the esophageal lesion grade post-ablation. Conclusion: The incidence of ETL in patients undergoing left atrial posterior wall isolation is substantial. Our method of esophageal cooling did not decrease the incidence of ETL. There was a non-significant trend toward fewer severe lesions with cooling, but one cannot conclude the value of cooling from this pilot study.

**Jones G, Adams L, Metz T** and Akay B (2020). "Child with profound gastric distension." Annals of Emergency Medicine 75(5): 577-626.

[Full Text](#)

*Department of Emergency Medicine*

*Department of Diagnostic Radiology and Molecular Imaging*

**Jones G, Adams L, Metz T** and Akay B (2020). "Images in emergency medicine diagnosis." Annals of Emergency Medicine 75(5): 577.

[Full Text](#)

*Department of Emergency Medicine*

Kadri AN, Bernardo M, Werns SW and **Abbas AE** (2020). "TAVR vs. SAVR in patients with cancer and aortic stenosis: A

nationwide readmission database registry study." Journal of the American College of Cardiology 75(11): 2139.

[Full Text](#)

*Department of Internal Medicine*

Kadri AN, Mahmood A, Nusairat L, Khodor S, Ali A, Jack AEL, Chagas C, Bangash N, Gad MM, Chahine J, **Jafri S** and Werns SW (2020). "National trends of tobacco, alcohol, and drug abuse in patients admitted with acute myocardial infarction." Journal of the American College of Cardiology 75(11): 255.

[Full Text](#)

*Department of Urology*

Kalra A, Michos ED and **Chinnaiyan KM** (2020). "COVID-19 and the healthcare workers." European Heart Journal. ePub Ahead of Print.

[Full Text](#)

*Department of Internal Medicine*

Kant S, Kesarwani P, **Prabhu A, Graham SF**, Buelow KL, Nakano I and **Chinnaiyan P** (2020). "Enhanced fatty acid oxidation provides glioblastoma cells metabolic plasticity to accommodate to its dynamic nutrient microenvironment." Cell Death & Disease 11(4): 253.

[Full Text](#)

*Department of Radiation Oncology*

*Department of Pediatrics*

*Department of Obstetrics & Gynecology*

Despite advances in molecularly characterizing glioblastoma (GBM), metabolic alterations driving its aggressive phenotype are only beginning to be recognized. Integrative cross-platform analysis coupling global metabolomic and gene expression profiling on patient-derived glioma identified fatty acid beta-oxidation (FAO) as a metabolic node in GBM. We determined that the biologic consequence of enhanced FAO is directly dependent upon tumor microenvironment. FAO serves as a metabolic cue to drive proliferation in a beta-HB/GPR109A dependent autocrine manner in nutrient favorable conditions, while providing an efficient, alternate source of ATP only in nutrient unfavorable conditions. Rational combinatorial strategies designed to target these dynamic roles FAO plays in gliomagenesis resulted in necroptosis-mediated metabolic synthetic lethality in GBM. In summary, we identified FAO as a dominant metabolic node in GBM that provides metabolic plasticity, allowing these cells to adapt to their dynamic microenvironment. Combinatorial strategies designed to target these diverse roles FAO plays in gliomagenesis offers therapeutic potential in GBM.

**Kelekar A** and **Afonso N** (2020). "Evaluation of the effect of a new clinical reasoning curriculum in a pre-clerkship clinical skills course." Perspectives on Medical Education 9(2): 123-127.

[Full Text](#)

*Department of Internal Medicine*

*Department of Foundational Medical Studies (OU)*

Introduction: Clinical reasoning is often not explicitly taught to novice medical students. Pre-clerkship clinical skills courses are an ideal venue to teach the clinical reasoning process. The aim of the study was to evaluate the impact of a preclinical clinical reasoning curriculum through an end-of-semester objective structured clinical examination. Methods: This study was conducted through our longitudinal clinical skills course.

Second year medical (M2) students who received the clinical reasoning curriculum in 2018 formed the study cohort. M2 students from the previous year, who did not have the clinical reasoning curriculum, formed the comparison cohort. Several modalities were used to teach clinical reasoning including whole case approach, serial cue approach, self-explanation of pathophysiological mechanisms and comparison of closely related diagnoses. The students interviewed a standardized patient and documented the history along with three likely diagnoses. Results: Students in the study cohort achieved higher scores on differential diagnosis (1.98 vs. 1.64 in the comparison cohort,  $p < 0.001$ ). There was no statistically significant difference in the frequency of relevant symptoms queried between the study and comparison cohorts (3.74 vs. 3.34,  $p > 0.05$ ).

Discussion: Our study confirms that the introduction of clinical reasoning in a pre-clerkship clinical skills curriculum increases students' ability to select relevant symptoms and provides them with a roadmap for

expanding their differential diagnoses.

Kerndt CC, Bills JA, Shareef ZJ, **Balinski AM**, Summers DF and Tan JM (2020). "Early disseminated Lyme carditis inducing high-degree atrioventricular block." Case Reports in Cardiology 2020: 5309285.

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*OUWB Medical Student Author*

Lyme disease is the most common tick-borne illness in the United States due to *Borrelia burgdorferi* infection. This case demonstrates a 20-year-old male patient presenting with complaints of annular skin rash, malaise, fever, and lightheadedness after significant outdoor exposure. Physical exam revealed multiple large targetoid lesions on the back and extremities. The rash had raised borders and centralized clearing consistent with erythema migrans chronicum. Electrocardiogram (ECG) revealed a high-degree atrioventricular (AV) block. The patient was started on intravenous ceftriaxone due to clinical suspicion for Lyme carditis. ELISA and Western blot tests were reactive for Lyme IgM and IgG, confirming the diagnosis. The AV block resolved by hospital day four and the patient was discharged with outpatient follow-up. Early identification of disease allowed for effective treatment with no adverse outcomes or sequelae.

Kheterpal S, Vaughn MT, Dubovoy TZ, Shah NJ, Bash LD, Colquhoun DA, Shanks AM, Mathis MR, **Soto RG**, Bardia A, Bartels K, McCormick PJ, Schonberger RB and Saager L (2020). "Sugammadex versus neostigmine for reversal of neuromuscular blockade and postoperative pulmonary complications (STRONGER): A multicenter matched cohort analysis." Anesthesiology 132(6): 1371-1381.

[Request Form](#)

*Department of Anesthesiology*

Background: Five percent of adult patients undergoing noncardiac inpatient surgery experience a major pulmonary complication. The authors hypothesized that the choice of neuromuscular blockade reversal (neostigmine vs. sugammadex) may be associated with a lower incidence of major pulmonary complications. Methods: Twelve U.S. Multicenter Perioperative Outcomes Group hospitals were included in a multicenter observational matched-cohort study of surgical cases between January 2014 and August 2018. Adult patients undergoing elective inpatient noncardiac surgical procedures with general anesthesia and endotracheal intubation receiving a nondepolarizing neuromuscular blockade agent and reversal were included. Exact matching criteria included institution, sex, age, comorbidities, obesity, surgical procedure type, and neuromuscular blockade agent (rocuronium vs. vecuronium). Other preoperative and intraoperative factors were compared and adjusted in the case of residual imbalance. The composite primary outcome was major postoperative pulmonary complications, defined as pneumonia, respiratory failure, or other pulmonary complications (including pneumonitis; pulmonary congestion; iatrogenic pulmonary embolism, infarction, or pneumothorax). Secondary outcomes focused on the components of pneumonia and respiratory failure. Results: Of 30,026 patients receiving sugammadex, 22,856 were matched to 22,856 patients receiving neostigmine. Out of 45,712 patients studied, 1,892 (4.1%) were diagnosed with the composite primary outcome (3.5% sugammadex vs. 4.8% neostigmine). A total of 796 (1.7%) patients had pneumonia (1.3% vs. 2.2%), and 582 (1.3%) respiratory failure (0.8% vs. 1.7%). In multivariable analysis, sugammadex administration was associated with a 30% reduced risk of pulmonary complications (adjusted odds ratio, 0.70; 95% CI, 0.63 to 0.77), 47% reduced risk of pneumonia (adjusted odds ratio, 0.53; 95% CI, 0.44 to 0.62), and 55% reduced risk of respiratory failure (adjusted odds ratio, 0.45; 95% CI, 0.37 to 0.56), compared to neostigmine. Conclusions: Among a generalizable cohort of adult patients undergoing inpatient surgery at U.S. hospitals, the use of sugammadex was associated with a clinically and statistically significant lower incidence of major pulmonary complications.

Khoury J, Anusim N, Macari D and **Jaiyesimi I** (2020). "Demographics and survival in male breast cancer: An updated analysis of SEER database." Cancer Research 80(4).

[Request Form](#)

*Department of Internal Medicine*

Kim DH, Hwang RW, Lee GH, Joshi R, **Baker KC**, Arnold P, Sasso R, **Park D** and **Fischgrund J** (2020). "Comparing rates of early pedicle screw loosening in posterolateral lumbar fusion with and without transforaminal lumbar interbody fusion." Spine Journal. ePub Ahead of Print.

## [Request Form](#)

### *Department of Orthopaedic Surgery*

Background Context: Addition of interbody fusion via a transforaminal approach (TLIF) has become a popular surgical option for treatment of degenerative lumbar conditions. Although technically more complicated than posterolateral fusion surgery (PLF), it has been suggested that TLIF provides superior immediate stability and protects against early pedicle screw loosening. This theory has never been formally examined in a clinical study. Purpose: To determine the impact of TLIF on early pedicle screw loosening and radiographic fusion rates compared with PLF using pedicle screws alone in the treatment of single level lumbar degenerative conditions. Study Design: Retrospective computed tomography (CT) based review. Patient Sample: One hundred ninety-three patients underwent TLIF+PLF with local autograft bone or PLF alone with local autograft bone. Outcome Measures: Radiographic fusion rates and screw loosening were measured at 6 and 12 months using strict CT criteria. Patient self-reported outcome measures included Visual Analog Scale for low back pain and leg pain and Oswestry Disability Index. Methods: Postoperative thin-cut CTs were examined for pedicle screw loosening and radiographic fusion status. Early screw loosening rates were determined using 6-month postoperative CT, whereas radiographic fusion rates were determined using 12-month postoperative CT. One-way analysis of variance was used to determine significant differences in mean outcome scores and other continuous measures between groups at baseline and follow-up. Chi-square test of independence or Fisher's exact test was used to compare proportions between groups on categorical measures. Results: Eighty-three patients underwent TLIF+PLF (Group A) and 115 patients underwent PLF alone (Group B). At 6-month follow-up, loosening was observed in 49 of 792 total screws (6.19%). Of Group A, 7.23% of patients demonstrated loosening of one or more screws compared with 18.3% of Group B (Chi-Square value 4.98;  $p=.0256$ ). Six-month radiographic fusion rates were 36.1% in Group A versus 44.3% in Group B. Twelve-month radiographic fusion rates increased to 58.6% in Group A versus 73.1% in Group B. Among Group A patients not yet fused at 6 months, screw loosening was associated with a 0% rate of radiographic fusion at 12 months versus 41.2% without screw loosening. Rates for Group B were 6.25% and 70.3%, respectively. Patient age was a significant independent predictor of loosening ( $p=.0336$ ). Conclusions: TLIF appears to have a protective effect, reducing rates of early screw loosening by approximately 60% versus PLF. However, this effect appears independent of actual overall radiographic fusion rates which may be approximately 20% lower with TLIF at 12 months. TLIF may have advantages in patients where early loosening is a particular concern, for example, in the setting of increased patient age.

Kochanny SE, Worden FP, Adkins DR, Lim DW, Bauman JE, Wagner SA, **Brisson RJ**, Karrison TG, Stadler WM, Vokes EE and Seiwert TY (2020). "A randomized phase 2 network trial of tivantinib plus cetuximab versus cetuximab in patients with recurrent/metastatic head and neck squamous cell carcinoma." *Cancer* 126(10): 2146-2152.

### [Full Text](#)

#### *OUWB Medical Student Author*

Background: MET signaling is a well described mechanism of resistance to anti-EGFR therapy, and MET overexpression is common in head and neck squamous cell carcinomas (HNSCCs). In the current trial, the authors compared the oral MET inhibitor tivantinib (ARQ197) in combination with cetuximab (the TC arm) versus a control arm that received cetuximab monotherapy (C) in patients with recurrent/metastatic HNSCC. Methods: In total, 78 evaluable patients with cetuximab-naive, platinum-refractory HNSCC were enrolled, including 40 on the TC arm and 38 on the C arm (stratified by human papillomavirus [HPV] status). Patients received oral tivantinib 360 mg twice daily and intravenous cetuximab 500 mg/m<sup>2</sup> once every 2 weeks. The primary outcome was the response rate (according to Response Evaluation Criteria in Solid Tumors, version 1.1), and secondary outcomes included progression-free and overall survival. After patients progressed on the C arm, tivantinib monotherapy was optional. Results: The response rate was 7.5% in the TC arm (N = 3; 1 complete response) and 7.9% in the C arm (N = 3; not significantly different [NS]). The median progression-free survival in both arms was 4 months (NS), and the median overall survival was 8 months (NS). Both treatments were well tolerated, with a trend toward increased hematologic toxicities in the TC arm (12.5% had grade 3 leukopenia). The response rate in 31 HPV-positive/p16-positive patients was 0% in both arms, whereas the response rate in HPV-negative patients was 12.7% (12.5% in the TC arm and 13% in the C arm). Fifteen patients received tivantinib monotherapy, and no responses were observed. Conclusions: Combined tivantinib plus cetuximab does not significantly improve the response rate or survival compared with



cetuximab alone but does increase toxicity in an unselected HNSCC population. Cetuximab responses appear to be limited to patients who have HPV-negative HNSCC. MET-aberration-focused trials for HNSCC and the use of higher potency, selective MET inhibitors remain of interest.

Kotsopoulos J, Karlan B, Gronwald J, Hall E, Moller P, Tung N, **Zakalik D**, Foulkes WD, **Rosen B**, Neuhausen SL, Sun P, Lubinksi J and Narod SA (2020). "Long-term outcomes following a diagnosis of ovarian cancer at the time of preventive oophorectomy among BRCA1 and BRCA2 mutation carriers." [International Journal of Gynecological Cancer](#) 30(6): 825-830.

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*Department of Internal Medicine*

*Department of Obstetrics & Gynecology*

Introduction: Preventive bilateral salpingo-oophorectomy is the most effective means of reducing the risk of ovarian cancer among women with an inherited BRCA1 or BRCA2 mutation. Some women are diagnosed with an invasive cancer (ovarian or fallopian tube) at the time of preventive surgery, referred to as an 'occult' cancer. The survival experience of these women is not known. Methods: We estimated the 10-year survival for 52 BRCA mutation carriers diagnosed with an occult ovarian or fallopian tube cancer at the time of preventive bilateral salpingo-oophorectomy. Results: The mean age at diagnosis was 51.6 (range 33-69) years. All were serous cancers (although 14 were missing information on histologic subtype). Of the 20 cases with information available on stage at diagnosis, 10 were stage I, 1 was stage II, and 9 were stage III (n=32 missing). After a mean of 6.8 years, 12 women died (23%). The 10-year all-cause survival was 74%. Conclusion: Although based on only 52 cases, these findings suggest a more favorable prognosis for BRCA mutation carriers diagnosed with an occult rather than incident disease.

Kountanis J, **Vahabzadeh C**, **Bauer S**, Muzik M, Cassidy R, Aman C, MacEachern M and Bauer M (2020). "Labor epidural analgesia and the risk of postpartum depression: A meta-analysis of observational studies." [Journal of Clinical Anesthesiology](#) 61: 109658.

[Full Text](#)

*Department of Anesthesiology*

*Department of Obstetrics & Gynecology*

Study Objective: This study aims to systematically review the literature to evaluate the association between labor epidural analgesia (LEA) and postpartum depression (PPD). Design: Meta-analysis. Setting: Obstetric patients delivering vaginally with or without LEA in a hospital. Interventions: This study aimed to investigate the effects of providing LEA on developing PPD. Measurements: Pooled odds ratios (OR) and 95% confidence intervals (CI) were calculated using the random effects model. Results: A total of 356 full text articles were reviewed. Eleven articles studying 85,928 patients met inclusion criteria. The pooled unadjusted OR 1.03 and 95% CI (0.77, 1.37) suggest that LEA is not associated with a decreased risk of developing PPD. Conclusions: Labor epidural analgesia was not shown to confer protection against developing PPD according to this meta-analysis. Future studies are needed to explore whether other aspects of LEA, beyond its presence or absence, influence the onset of PPD.

Kullar R, Marcelin JR, Swartz TH, Piggott DA, Macias Gil R, **Mathew TA** and Tan T (2020). "Racial disparity of coronavirus disease 2019 (COVID-19) in African American communities." [Journal of Infectious Diseases](#). ePub Ahead of Print.

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*Department of Internal Medicine*

The COVID-19 pandemic has unveiled unsettling disparities in the outcome of the disease among African Americans. These disparities are not new, but are rooted in structural inequities that must be addressed to adequately care for communities of color. We describe the historical context of these structural inequities, their impact on the progression of COVID-19 in the African American (Black) community, and suggest a multifaceted approach to addressing these healthcare disparities. Of note, terminology from survey data cited for this article varied from Blacks, African Americans or both; for consistency, we use African Americans throughout.

**LaBan M** (2020). "Regarding "Female office workers with moderate neck pain have increased anterior positioning of

the cervical spine and stiffness of the upper trapezius myofascial tissues in sitting position". [Physical Medicine and Rehabilitation](#). ePub Ahead of Print.

[Full Text](#)

*Department of Physical Medicine & Rehabilitation*

Lalwani AM, **Yilmaz A**, Bisgin H, Ugur Z, Akyol S and **Graham SF** (2020). "The biochemical profile of post-mortem brain from people who suffered from epilepsy reveals novel insights into the etiopathogenesis of the disease." [Metabolites](#) 10(6): 261.

[Full Text](#)

*Department of Obstetrics & Gynecology*

Epilepsy not-otherwise-specified (ENOS) is one of the most common causes of chronic disorders impacting human health, with complex multifactorial etiology and clinical presentation. Understanding the metabolic processes associated with the disorder may aid in the discovery of preventive and therapeutic measures. Post-mortem brain samples were harvested from the frontal cortex (BA8/46) of people diagnosed with ENOS cases (n = 15) and age- and sex-matched control subjects (n = 15). We employed a targeted metabolomics approach using a combination of proton nuclear magnetic resonance ((1)H-NMR) and direct injection/liquid chromatography tandem mass spectrometry (DI/LC-MS/MS). We accurately identified and quantified 72 metabolites using (1)H-NMR and 159 using DI/LC-MS/MS. Among the 212 detected metabolites, 14 showed significant concentration changes between ENOS cases and controls (p < 0.05; q < 0.05). Of these, adenosine monophosphate and O-acetylcholine were the most commonly selected metabolites used to develop predictive models capable of discriminating between ENOS and unaffected controls. Metabolomic set enrichment analysis identified ethanol degradation, butyrate metabolism and the mitochondrial beta-oxidation of fatty acids as the top three significantly perturbed metabolic pathways. We report, for the first time, the metabolomic profiling of postmortem brain tissue from patients who died from epilepsy. These findings can potentially expand upon the complex etiopathogenesis and help identify key predictive biomarkers of ENOS.

Lamb LE, Bartolone SN and **Chancellor MB** (2020). "Detection of Zika virus using Reverse Transcription-Loop-Mediated Isothermal Amplification (RT-LAMP)," In Gary Kobinger and Trina Racine (eds.) [Methods in Molecular Biology](#). Springer Science+Business Media: New York. pp: 137-146.

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*Department of Urology*

Reverse Transcription-Loop-mediated Isothermal Amplification (RT-LAMP) allows amplification and detection of RNA or DNA rapidly and relatively inexpensively. Here we describe how RT-LAMP can be utilized to detect Zika virus in human urine or serum samples or Aedes mosquito samples. This can be completed in under 30 min and without first isolating the RNA from the sample.

Lamb LE, Bartolone SN, Ward E and **Chancellor MB** (2020). "Rapid detection of Novel Coronavirus/Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) by reverse transcription-loop-mediated isothermal amplification." [PLoS ONE](#) 15(6): 0234682.

[Full Text](#)

*Department of Urology*

Novel Coronavirus/Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2 or 2019-nCoV), and the subsequent disease caused by the virus (coronavirus disease 2019 or COVID-19), is an emerging global health concern that requires a rapid diagnostic test. Quantitative reverse transcription PCR (qRT-PCR) is currently the standard for SARS-CoV-2 detection; however, Reverse Transcription Loop-Mediated Isothermal Amplification (RT-LAMP) may allow for faster and cheaper field based testing at point-of-risk. The objective of this study was to develop a rapid screening diagnostic test that could be completed in 30-45 minutes. Simulated patient samples were generated by spiking serum, urine, saliva, oropharyngeal swabs, and nasopharyngeal swabs with a portion of the SARS-CoV-2 nucleic sequence. RNA isolated from nasopharyngeal swabs collected from actual COVID-19 patients was also tested. The samples were tested using RT-LAMP as well as by conventional qRT-PCR. Specificity of the RT-LAMP was evaluated by also testing against other related coronaviruses. RT-LAMP specifically detected SARS-CoV-2 in both simulated patient samples and clinical specimens. This test was performed in 30-45 minutes. This approach could be used for

monitoring of exposed individuals or potentially aid with screening efforts in the field and potential ports of entry.

Lapkus M, **Al-Hadidi A, Karabon P, Naseem A, Khandhar P** and Akay B (2020). "Impact of reintubation and use of respiratory rescue therapy in the pediatric intensive care unit." *Critical Care Medicine* 48(1): 162.

[Full Text](#)

*Department of Pediatrics*

*OUWB Medical Student Author*

*Department of Medical Studies*

**Lau WC**, Shannon FL, **Hanzel GS, Safian RD, Abbas AE**, Sakwa MP, Chen NW, **Almany SL, Hanson ID** and **Fayne RJ** (2020). "Transfemoral transcatheter aortic valve replacement using fascia iliaca block as an alternative approach to conscious sedation as compared to general anesthesia." *Cardiovascular Revascularization Medicine* 21(5): 594-601.

[Full Text](#)

*Department of Anesthesiology*

*Department of Internal Medicine*

Background/Purpose: General Anesthesia (GA) and conscious sedation (CS) are anesthetics for transfemoral transcatheter aortic valve replacement (TF-TAVR). We compared TF-TAVR outcomes using a novel anesthetic approach with fascia iliaca block (FIB) plus minimal CS (MCS) versus GA. Methods: This retrospective propensity-matched study included consecutive TF-TAVR patients from January 2013 to December 2017 and dichotomized into FIB-MCS vs. GA. Data were collected from electronic records, Society of Thoracic Surgery (STS) database, and the Transcatheter Valve Therapies (TVT) Registry. Primary endpoints were operating room (OR) time, intensive care unit (ICU) and hospital length of stay (LOS). Secondary endpoints were 30-day, 1-year mortality, quality of life, 30-day re-hospitalization rate, failure of FIB-MCS, and hospital safety outcomes. Results: A total of 304 TF-TAVR patients; FIB-MCS (n=219) vs. GA (n=85). Propensity matched 162 patients; FIB-MCS (n=108) vs. GA (n=54). FIB-MCS had shorter OR time (197.6+/-56.3 vs. 248.2+/-46.3min, p<0.001), ICU (67.8+/-71.7 vs. 84.9+/-72.1h, p=0.004) and hospital LOS (3.2+/-3.7 vs. 5.9+/-3.5 d, p<0.001). FIB-MCS had lower rate of blood transfusion. FIB-MCA vs. GA 30-day and 1-year mortality were similar in the entire (2.3 vs. 2.4%, p=1.0; and 8.2 vs. 5.9%, p=0.49) and matched cohorts (0 vs. 3.7%, p=0.11 and 7.4 vs. 5.6%, p=0.75). FIB-MCS were less likely to be re-hospitalized [Odd Ratio: 0.32, CI:0.13-0.76] and 2% to 3% higher KCCQ-12 score. Conclusion: TF-TAVR using FIB-MCS is feasible and safe with shorter OR time, ICU and hospital LOS, lower risk of 30-day re-hospitalization, similar 30-day and 1-year mortality with better quality of life at 1-year follow-up.

Laucis AM, Jagsi R, Griffith KA, Dominello MM, Walker EM, Abu-Isa EI, **Dilworth JT**, Vicini F, Kocheril PG, Browne CH, Mietzel MA, Moran JM, Hayman JA and Pierce LJ (2020). "The role of facility variation on racial disparities in use of hypofractionated whole breast radiotherapy." *International Journal of Radiation Oncology, Biology, Physics*. ePub Ahead of Print.

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*Department of Radiation Oncology*

Introduction: Hypofractionated radiotherapy is a less burdensome and less costly approach that is efficacious for most patients with early-stage breast cancer. Concerns about racial disparities in adoption of medical advances motivate investigation of the use of hypofractionated radiation in diverse populations. The goal of our study was to determine whether hypofractionated whole breast radiotherapy after breast conserving surgery was being similarly used across racial groups in the state of Methods and Materials: A prospectively collected statewide quality consortium database from 25 institutions was queried for breast cancer patients who completed hypofractionated (HF) or conventionally fractionated (CF) whole breast radiotherapy (RT) from 1/2012-12/2018. We used patient-level multivariable modeling to evaluate associations between HF use and race, controlling for patient and facility factors, and multilevel modeling to account for patient clustering within facilities. Results: Of 9,634 patients analyzed, 81% self-reported race as White, 17% as Black and 2% as Asian, similar to statewide and national distributions. 31.7% of Whites were treated at teaching centers compared to 66.7% of Blacks and 64.8% of Asians. In 2018, HF was utilized in 72.7% of Whites versus 56.7% of Blacks and 67.6% of Asians (p=0.0411). On patient-level multivariable analysis, Black and Asian races were significantly associated with a lower likelihood of HF receipt (p<0.001), despite accounting for

treatment year, age, laterality, BMI, breast volume, comorbidities, stage, triple-negative status, IMRT use, teaching center treatment, and 2011 ASTRO Hypofractionation Guideline eligibility. On multilevel analysis, race was no longer significantly associated with HF receipt. Conclusions: We observed that Black and Asian patients receive hypofractionated RT less often than Whites, despite more frequent treatment at teaching centers. Multilevel modeling eliminated this disparity, suggesting that differences in facility-specific HF use appear to have contributed. Further inquiry is needed to determine if reduction of facility-level variation may reduce disparities in accessing HF treatment.

Lemor A, Basir MB, Patel K, Kolski B, Kaki A, Kapur N, Riley R, Finley J, Goldsweig A, Aronow HD, Belford PM, Tehrani B, Truesdell AG, Lasorda D, Bharadwaj A, **Hanson I**, LaLonde T, Gorgis S, O'Neill W and Natl Cardiogenic Shock I (2020). "Multivessel versus culprit: Vessel percutaneous coronary intervention in cardiogenic shock." [JACC-Cardiovascular Interventions](#) 13(10): 1171-1178.

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*Department of Internal Medicine*

**Objectives:** This study sought to compare outcomes of patients enrolled in the NCSI (National Cardiogenic Shock Initiative) trial who were treated using a revascularization strategy of percutaneous coronary intervention (PCI) of multivessel PCI (MV-PCI) versus culprit-vessel PCI (CV-PCI). **Background:** In patients with multivessel disease who present with acute myocardial infarction and cardiogenic shock (AMICS), intervening on the nonculprit vessel is controversial. There are conflicting published reports and lack of evidence, particularly in patients treated with early mechanical circulatory support (MCS). **Methods:** From July 2016 to December 2019, patients who presented with AMICS to 57 participating hospitals were included in this analysis. All patients were treated using a standard shock protocol emphasizing early MCS, revascularization, and invasive hemodynamic monitoring. Patients with multivessel coronary artery disease (MVCAD) were analyzed according to whether CV-PCI or MV-PCI was undertaken during the index procedure. **Results:** Of 198 patients with MVCAD, 126 underwent MV-PCI (64%) and 72 underwent CV-PCI (36%). Demographics between the cohorts were similar with respect to age, sex, history of diabetes, prior PCI or coronary artery bypass grafting, and prior history of myocardial infarction. Patients who underwent MV-PCI had a trend toward more severe impairment of cardiac output and worse lactate clearance on presentation, and cardiac performance was significantly worse at 12 h. However, 24 h from PCI, the hemometabolic derangements were similar. Survival and rates of acute kidney injury were not significantly different between groups (69.8% MV-PCI vs. 65.3% CV-PCI; p 1/4 0.51; and 29.9% vs. 34.2%; p 1/4 0.64, respectively). **Conclusions:** In patients with MVCAD presenting with AMICS treated with early MCS, revascularization of nonculprit lesions was associated with similar hospital survival and acute kidney injury when compared with culprit-only PCI. Selective nonculprit PCI can be safely performed in AMICS in patients supported with mechanical circulatory support.

Lewis H, Samanta D, Örsell JL, Bosanko KA, Rowell A, Jones M, Dale RC, Taravath S, Hahn CD, Krishnakumar D, Chagnon S, Keller S, Hagebeuk E, Pathak S, Bebin EM, **Arndt DH**, Alexander JJ, Mainali G, Coppola G, Maclean J, Sparagana S, McNamara N, Smith DM, Raggio V, Cruz M, Fernández-Jaén A, Kava MP, Emrick L, Fish JL, Vanderver A, Helman G, Pierson TM and Zarate YA (2020). "Epilepsy and electroencephalographic abnormalities in SATB2-associated syndrome." [Pediatric Neurology](#). ePub Ahead of Print.

[Full Text](#)

*Department of Pediatrics*

**Background:** Seizures are an under-reported feature of the SATB2-associated syndrome phenotype. We describe the electroencephalographic findings and seizure semiology and treatment in a population of individuals with SATB2-associated syndrome. **Methods:** We performed a retrospective review of 101 individuals with SATB2-associated syndrome who were reported to have had a previous electroencephalographic study to identify those who had at least one reported abnormal result. For completeness, a supplemental survey was distributed to the caregivers and input from the treating neurologist was obtained whenever possible. **Results:** Forty-one subjects were identified as having at least one prior abnormal electroencephalography. Thirty-eight individuals (93%) had epileptiform discharges, 28 (74%) with central localization. Sleep stages were included as part of the electroencephalographies performed in 31 individuals (76%), and epileptiform activity was recorded during sleep in all instances (100%). Definite clinical seizures were diagnosed in 17 individuals (42%) with a mean age of onset of 3.2

years (four months to six years), and focal seizures were the most common type of seizure observed (42%). Six subjects with definite clinical seizures needed polytherapy (35%). Delayed myelination and/or abnormal white matter hyperintensities were seen on neuroimaging in 19 individuals (61%). Conclusions: Epileptiform abnormalities are commonly seen in individuals with SATB2-associated syndrome. A baseline electroencephalography that preferably includes sleep stages is recommended during the initial evaluation of all individuals with SATB2-associated syndrome, regardless of clinical suspicion of epilepsy.

Liu G, Li X, Zhao L, Zheng W, Qin A, Zhang S, Stevens C, Yan D, Kabolizadeh P and Ding X (2020). "A novel energy sequence optimization algorithm for efficient spot-scanning proton arc (SPArc) treatment delivery." *Acta Oncologica*. ePub Ahead of Print.

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*Department of Radiation Oncology*

Background: Spot-scanning proton arc therapy (SPArc) has been proposed to improve dosimetric outcome and to simplify treatment workflow. To efficiently deliver a SPArc plan, it's crucial to minimize the number of energy layer switches (ELS) a sending because of the magnetic hysteresis effect. In this study, we introduced a new SPArc energy sequence optimization algorithm (SPArc\_seq) to reduce ascended ELS and to investigate its impact on the beam delivery time (BDT).Method and materials: An iterative energy layer sorting and re-distribution mechanism following the direction of the gantry rotation was implemented in the original SPArc algorithm (SPArc\_orig). Five disease sites, including prostate, lung, brain, head neck cancer (HNC) and breast cancer were selected to evaluate this new algorithm. Dose-volume histogram (DVH) and plan robustness were used to assess the plan quality for both SPArc\_seq and SPArc\_orig plans. The BDT evaluations were analyzed through two methods: 1. fixed gantry angle delivery (BDTfixed) and 2. An in-house dynamic arc scanning controller simulation which considered of gantry rotation speed, acceleration and deceleration (BDTarc).Results: With a similar total number of energy layers, SPArc\_seq plans provided a similar nominal plan quality and plan robustness compared to SPArc\_orig plans. SPArc\_seq significantly reduced the number of ascended ELS by 83% (19 vs.115), 70% (16 vs. 64), 82% (19 vs. 104), 80% (19 vs. 94) and 70% (9 vs. 30), which effectively shortened the BDTfixed by 65% (386 vs. 1091 s), 61% (235 vs. 609 s), 64% (336 vs. 928 s), 48% (787 vs.1521 s) and 25% (384 vs. 511 s) and shortened BDTarc by 54% (522 vs.1128 s), 52% (310 vs.645 s), 53% (443 vs. 951 s), 49% (803 vs.1583 s) and 26% (398 vs. 534 s) in prostate, lung, brain, HNC and breast cancer, respectively.Conclusions: The SPArc\_seq optimization algorithm could effectively reduce the BDT compared to the original SPArc algorithm. The improved efficiency of the SPArc\_seq algorithm has the potential to increase patient throughput, thereby reducing the operation cost of proton therapy.

Lodise TP, Rosenkranz SL, Finnemeyer M, Evans S, Sims M, Zervos MJ, Creech CB, Patel PC, Keefer M, Riska P, Silveira FP, Scheetz M, Wunderink RG, Rodriguez M, Schrank J, Bleasdale SC, Schultz S, Barron M, Stapleton A, Wray D, Chambers H, Fowler VG and Holland TL (2020). "The Emperor's New Clothes: Prospective observational evaluation of the association between initial vancomycin exposure and failure rates among adult hospitalized patients with methicillin-resistant staphylococcus aureus bloodstream infections (PROVIDE)." *Clinical Infectious Diseases* 70(8): 1536-1545.

[Full Text](#)

*Department of Internal Medicine*

Background: Vancomycin is the most commonly administered antibiotic in hospitalized patients, but optimal exposure targets remain controversial. To clarify the therapeutic exposure range, this study evaluated the association between vancomycin exposure and outcomes in patients with methicillin-resistant Staphylococcus aureus (MRSA) bacteremia. Methods: This was a prospective, multicenter (n = 14), observational study of 265 hospitalized adults with MRSA bacteremia treated with vancomycin. The primary outcome was treatment failure (TF), defined as 30-day mortality or persistent bacteremia  $\geq 7$  days. Secondary outcomes included acute kidney injury (AKI). The study was powered to compare TF between patients who achieved or did not achieve day 2 area under the curve to minimum inhibitory concentration (AUC/MIC) thresholds previously found to be associated with lower incidences of TF. The thresholds, analyzed separately as co-primary endpoints, were AUC/MIC by broth microdilution  $\geq 650$  and AUC/MIC by Etest  $\geq 320$ . Results: Treatment failure and AKI occurred in 18% and 26% of patients, respectively. Achievement of the prespecified day 2 AUC/MIC thresholds was not associated with less TF. Alternative day 2 AUC/MIC thresholds associated with lower TF risks were not identified. A relationship between the day 2 AUC and AKI

was observed. Patients with day 2 AUC  $\leq 515$  experienced the best global outcomes (no TF and no AKI). Conclusions: Higher vancomycin exposures did not confer a lower TF risk but were associated with more AKI. The findings suggest that vancomycin dosing should be guided by the AUC and day 2 AUCs should be  $\leq 515$ . As few patients had day 2 AUCs  $< 400$ , further study is needed to define the lower bound of the therapeutic range.

Maas MB, Lizza BD, Abbott SM, Liotta EM, Gendy M, **Eed J**, Naidech AM, Reid KJ and Zee PC (2020). "Factors disrupting melatonin secretion rhythms during critical illness." *Critical Care Medicine* 48(6): 854-861.

[Full Text](#)

*OUWB Medical Student Author*

**Objectives:** The circadian system modulates many important physiologic processes, synchronizing tissue-specific functions throughout the body. We sought to characterize acute alterations of circadian rhythms in critically ill patients and to evaluate associations between brain dysfunction, systemic multiple organ dysfunction, environmental stimuli that entrain the circadian rhythm (zeitgebers), rest-activity rhythms, and the central circadian rhythm-controlled melatonin secretion profile. **Design:** Prospective study observing a cohort for 24-48 hours beginning within the first day of ICU admission. **Setting:** Multiple specialized ICUs within an academic medical center. **Patients:** Patients presenting from the community with acute onset of either intracerebral hemorrhage as a representative neurologic critical illness or sepsis as a representative systemic critical illness. Healthy control patients were studied in using modified constant routine in a clinical research unit. **Interventions:** None. **Measurements and Main Results:** Light, feeding, activity, medications, and other treatment exposures were evaluated along with validated measures of encephalopathy (Glasgow Coma Scale), multiple organ system function (Sequential Organ Failure Assessment score), and circadian rhythms (profiles of serum melatonin and its urinary metabolite 6-sulphatoxymelatonin). We studied 112 critically ill patients, including 53 with sepsis and 59 with intracerebral hemorrhage. Environmental exposures were abnormal, including light (dim), nutritional intake (reduced or absent and mistimed), and arousal stimuli (increased and mistimed). Melatonin amplitude and acrophase timing were generally preserved in awake patients but dampened and delayed with increasing encephalopathy severity. Melatonin hypersecretion was observed in patients exposed to catecholamine vasopressor infusions, but unaffected by sedatives. Change in vasopressor exposure was the only factor associated with changes in melatonin rhythms between days 1 and 2. **Conclusions:** Encephalopathy severity and adrenergic agonist medication exposure were the primary factors contributing to abnormal melatonin rhythms. Improvements in encephalopathy and medical stabilization did not rapidly normalize rhythms. Urinary 6-sulphatoxymelatonin is not a reliable measure of the central circadian rhythm in critically ill patients.

Macari DM, Gbadamosi B, **Jaiyesimi I** and **Gaikazian S** (2020). "Medical cannabis in cancer patients: A survey of a community hematology oncology population." *American Journal of Clinical Oncology*. ePub Ahead of Print.

[Full Text](#)

*Department of Internal Medicine*

**Objectives:** Cancer patients are using medical cannabis (MC) to address symptoms; however, little data exist to guide clinicians when counseling patients. We seek to define the patterns of MC use among cancer patients, as well as efficacy and safety of MC. **Materials and Methods:** Cancer patients attending oncology office visits at Beaumont Hospital, Michigan from July to December 2018 were anonymously surveyed. The survey included data regarding demographics, diagnosis, treatment, symptom burden, and MC use. Patients who reported MC use since their cancer diagnosis completed a section on patterns of use, efficacy, and safety. **RESULTS:** The response rate was 188 of 327 (57.5%). MC use was reported by 46 of 188 (24.5%). A median composite baseline symptom score ranging from 8 (best) to 32 (worst) was higher in patients using MC versus nonusers; 17.5 versus 14.4 ( $P < 0.001$ ). Pain was the symptom with the highest frequency of improvement 34/42 (81%), followed by appetite 34/44 (77.3%), and anxiety 32/44 (73%). MC improved the ability to tolerate treatment in 24/44 (54.5%). Cloudy thinking is the symptom that worsened the most 7/42 (16.7%), with decreased energy being experienced by 4/41 (9.8%) of the users. **Conclusions:** MC was utilized by a significant portion of cancer patients in this sample, across age, diagnosis, stage, and treatment. Patients with a higher severity of baseline symptoms were more likely to use MC and report a favorable efficacy profile of MC. Minimal toxicity was reported in this cohort. Prospective studies are needed to define the efficacy and safety of MC.



Madder RD, **Dixon SR**, Seth M, Lee D, Earl T, Hill T, Shah I and Gurm HS (2020). "Institutional variability in patient radiation doses  $\geq$  5 Gy during percutaneous coronary intervention." JACC: Cardiovascular Interventions 13(7): 846-856.

[Request Form](#)

*Department of Internal Medicine*

Objectives: The aim of this study was to evaluate institutional variability in high radiation doses during percutaneous coronary intervention (PCI). Background: It is unknown whether radiation safety practices are optimally applied across institutions performing PCI. Methods: Using data from a large statewide registry, PCI discharges between July 1, 2016, and March 31, 2018, with a procedural air kerma (AK) recorded were analyzed. PCI procedures were grouped by the performing hospital, and institutional frequency of procedural AK  $\geq$  5 Gy was calculated. Fitted hierarchical Bayesian modeling was performed to identify variables independently associated with an AK  $\geq$  5 Gy. The performing hospital was included as a random effect in the hierarchical model. Results: Among 36,201 PCI procedures at 28 hospitals, procedural AK was  $\geq$  5 Gy in 1,477 cases (4.1%),  $\geq$  10 Gy in 185 (0.5%), and  $\geq$  15 Gy in 105 (0.3%). The institutional frequency of procedural AK  $\geq$  5 Gy ranged from 0.0% to 10.9%. Bayesian modeling identified body mass index, dyslipidemia, diabetes, prior coronary bypass surgery, use of mechanical circulatory support, and the performing hospital as independent predictors of an AK  $\geq$  5 Gy. The median odds ratio for the performing hospital, representing an estimate of the contribution of interhospital variability in determining the odds of having a procedural AK  $\geq$  5 Gy, was 3.08 (95% confidence interval: 3.01 to 3.16). Conclusions: Wide variability exists in the institutional frequency of procedural AK  $\geq$  5 Gy during PCI. After accounting for patient characteristics and procedural variables, the performing hospital appears to be a major factor in determining patient radiation dose in contemporary PCI.

**Mahmoud TH** (2020). "Insight into long-term outcomes after macular hole surgery." Ophthalmology Retina 4(4): 377.

[Request Form](#)

*Department of Ophthalmology*

**Maisels MJ** and Watchko JF (2020). "Improving post-discharge neonatal surveillance for the jaundiced newborn." Acta Paediatrica 109(5): 872-873.

[Full Text](#)

*Department of Pediatrics*

Mando R, **Hanzel GS**, **Hite A**, Arce PFS, **Gallagher M**, **Lau W**, Pibarot P, **Shannon F** and **Abbas AE** (2020). "Invasive hemodynamic characterization of different flow-gradient aortic stenosis states." Journal of the American College of Cardiology 75(11): 1483.

[Full Text](#)

*Department of Internal Medicine*

*OUIB Medical Student Author*

*Department of Surgery*

Mando R, **Hanzel GS**, **Hite A**, Sigua-Arce P, **Gallagher M**, **Lau W**, Pibarot P, Shannon F and **Abbas AE** (2020). "Echocardiographic/catheterization discordance in low vs. high gradient and low vs. normal flow aortic stenosis." Journal of the American College of Cardiology 75(11): 1484.

[Full Text](#)

*Department of Internal Medicine*

*OUIB Medical Student Author*

Mathis MR, Naik BI, Freundlich RE, Shanks AM, Heung M, Kim M, Burns ML, Colquhoun DA, Rangrass G, Janda A, Engoren MC, Saager L, Tremper KK, Kheterpal S, Aziz MF, Coffman T, Durieux ME, Levy WJ, Schonberger RB, **Soto R**, Wilczak J, Berman MF, Berris J, Biggs DA, Coles P, Craft RM, Cummings KC, Ellis TA, II, Fleishut PM, Helsten DL, Jameson LC, van Klei WA, Kooij F, LaGorio J, Lins S, Miller SA, Molina S, Nair B, Paganelli WC, Peterson W, Tom S, Wanderer JP, Wedeven C and Multicenter Perioperative Outcomes Group I (2020). "Preoperative risk and the association between hypotension and postoperative acute kidney injury." Anesthesiology 132: 461-475.

[Full Text](#)

*Department of Anesthesiology*

Background: Despite the significant healthcare impact of acute kidney injury, little is known regarding prevention. Single-center data have implicated hypotension in developing postoperative acute kidney injury. The generalizability of this finding and the interaction between hypotension and baseline patient disease burden remain unknown. The authors sought to determine whether the association between intraoperative hypotension and acute kidney injury varies by preoperative risk. Methods: Major noncardiac surgical procedures performed on adult patients across eight hospitals between 2008 and 2015 were reviewed. Derivation and validation cohorts were used, and cases were stratified into preoperative risk quartiles based upon comorbidities and surgical procedure. After preoperative risk stratification, associations between intraoperative hypotension and acute kidney injury were analyzed. Hypotension was defined as the lowest mean arterial pressure range achieved for more than 10 min; ranges were defined as absolute (mmHg) or relative (percentage of decrease from baseline). Results: Among 138,021 cases reviewed, 12,431 (9.0%) developed postoperative acute kidney injury. Major risk factors included anemia, estimated glomerular filtration rate, surgery type, American Society of Anesthesiologists Physical Status, and expected anesthesia duration. Using such factors and others for risk stratification, patients with low baseline risk demonstrated no associations between intraoperative hypotension and acute kidney injury. Patients with medium risk demonstrated associations between severe-range intraoperative hypotension (mean arterial pressure less than 50 mmHg) and acute kidney injury (adjusted odds ratio, 2.62; 95% CI, 1.65 to 4.16 in validation cohort). In patients with the highest risk, mild hypotension ranges (mean arterial pressure 55 to 59 mmHg) were associated with acute kidney injury (adjusted odds ratio, 1.34; 95% CI, 1.16 to 1.56). Compared with absolute hypotension, relative hypotension demonstrated weak associations with acute kidney injury not replicable in the validation cohort. Conclusions: Adult patients undergoing noncardiac surgery demonstrate varying associations with distinct levels of hypotension when stratified by preoperative risk factors. Specific levels of absolute hypotension, but not relative hypotension, are an important independent risk factor for acute kidney injury.

McConachie S, Wahby K, Almadrahi Z and **Wilhelm S** (2020). "Early experiences with PEGylated carboxyhemoglobin bovine in anemic Jehovah's Witnesses: A case series and review of the literature." Journal of Pharmacology Practice 33(3): 372-377.

[Full Text](#)

*OUWB Medical Student Author*

Jehovah's Witnesses (JW) represent a complex patient population due to their refusal to accept blood transfusions on religious grounds. Pharmacologic management of anemic JW patients is limited to stimulation of hematopoiesis by iron and erythropoietin supplementation and reduction of blood loss by prothrombin complex concentrates (PCCs). Hemoglobin-based oxygen carriers (HBOCs) represent the only pharmacologic modality for JW patients capable of acutely increasing a patient's oxygen carrying capacity in the setting of organ failure, yet clinical safety and efficacy data are lacking in this population. We report 3 cases in which the HBOC, PEGylated carboxyhemoglobin bovine (Sanguinate(R)), was requested under emergent circumstances for severely anemic (hemoglobin <5 g/dL) JW patients who refused blood transfusions. Two patients received PEGylated carboxyhemoglobin infusions for severe anemia, while the third patient died prior to receiving the medication. One patient who received Sanguinate died after 5 units of medication. The other patient's hemoglobin recovered and she was discharged in stable condition. This series demonstrates the complex nature of the critically anemic JW population and highlights the clinical considerations of using HBOCs in clinical practice and the critical need for further research before they can be broadly recommended.

McConachie SM, Hanni CM, Raub JN, Mohammad RA and **Wilhelm SM** (2020). "The impact of multiple renal estimates on pharmacist dosing recommendations: A randomized trial." Annals of Pharmacotherapy: 1060028020935447.

[Full Text](#)

*OUWB Medical Student Author*

Background: Numerous equations are used for estimation of renal function, and many electronic medical records report multiple clearance estimates to assist with drug dosing. It is unknown whether the presence of

multiple clearance estimates affects clinical decision-making. Objective: To determine whether the presence of multiple renal clearance estimates affects pharmacist drug dosing decisions. Methods: A randomized trial in the form of an electronic survey including 4 clinical vignettes was delivered to hospital pharmacists. Vignettes consisted of a patient presenting with an acute pulmonary embolism requiring enoxaparin therapy. Pharmacists were randomized to receive a single estimate of renal function or multiple estimates for all vignettes. The primary outcome was deviation from approved recommendations on at least 1 vignette. The chi(2) test was used to detect differences in deviation rates between groups. Logistic regression was performed to adjust for the effects of potentially confounding variables. Results: A total of 154 studies were completed (73 in the multiple-estimate group and 81 in the single-estimate group). Pharmacists presented with multiple renal estimates were significantly more likely to deviate from recommended dosing regimens than pharmacists presented with a single estimate (54.7% vs 38.2%; P = 0.04). The results were driven primarily by the 2 vignettes that included discordance among Cockcroft-Gault equation creatinine clearance estimates. Logistic regression identified multiple estimates as the only independent predictor of deviation (P = 0.04). Conclusion and Relevance: Pharmacists provided with a single renal clearance estimate were more likely to adhere to approved dosing recommendations than pharmacists provided with multiple estimates.

**McCrohan M and Harvey R** (2020). "Medical student childcare helpers (iCollaborative)." MedEdPortal Resource ID 11081.

[Full Text](#)

*OUWB Medical Student Author*

**McDermott PN** (2020). "Surface dose and acute skin reactions in external beam breast radiotherapy." Medical Dosimetry 45(2): 153-158.

[Request Form](#)

*Department of Radiation Oncology*

The biologically relevant depth for acute skin reactions in radiotherapy is 70  $\mu\text{m}$ . The dose at this depth is difficult to measure or calculate and can be quite different than the dose at a depth of as little as 1 mm. For breast radiotherapy with medial and lateral tangential beams, the skin dose depends on both the contribution from the entrance beam and the exit beam. The skin dose has been estimated in a breast model hemi-ellipse accounting for field size, beam energy, obliquity, lack of backscatter, fractionation, size and shape of the hemi-ellipse. The dose has been held constant along the axis of symmetry of the hemi-ellipse by introducing modulation as in clinical IMRT practice. Dose distributions have been computed as a function of the polar angle from the center of the hemi-ellipse. The exit dose always dominates the entrance dose for all realistic parameters. As a result, the surface dose is higher for 18 MV than 6 MV over the entire surface for all reasonable sizes and shapes of the hemi-ellipse. The results of these calculations suggest that substituting an 18 MV beam for a 6 MV beam to achieve greater skin sparing may have just the opposite effect. The ratio of the surface dose to the mid-depth dose ranges from about 35% at polar angle 0 $^{\circ}$  to up to 70% at polar angle 80 $^{\circ}$ . The dose rises sharply at angles above 30 $^{\circ}$ . The surface dose rises moderately at all angles as the size of the hemi-ellipse increases. The effect of shape is somewhat complex: as the breast becomes flatter, doses at intermediate angles increase, but doses at small and large angles decrease. The biologically effective dose for erythema and moist desquamation is about 2 to 3 Gy higher at all polar angles for conventional fractionation (2.00 Gy  $\times$  25 fractions) than for hypofractionation (2.66 Gy  $\times$  16).

Meka SG, **Mohr M, Nair GB and Salman BA** (2020). "Autoimmune pulmonary alveolar proteinosis mimicking mycoplasma pneumonia in an adolescent." Respiratory Medicine Case Reports 30: 101100.

[Full Text](#)

*Department of Pediatrics*

*Department of Internal Medicine*

*OUWB Medical Student Author*

Pulmonary alveolar proteinosis (PAP) is a rare disease of abnormal surfactant production and accumulation. It is typically divided into three main categories: autoimmune, secondary and genetic. The genetic type is more common in children and adolescents, while the autoimmune type is most commonly seen in adults. Here we present an unusual case of autoimmune PAP presenting in an adolescent by mimicking findings of

Mycoplasma pneumonia. Although both PAP and Mycoplasma pneumonia may reveal the same findings of the "crazy paving pattern" on computed tomography imaging, it is imperative to distinguish the two as treatment options are dissimilar.

Mertz S, Chehab F, Koerber J, Hoffman J and **Smythe M** (2020). "Anti-inhibitor coagulant complex for hemorrhage reversal in patients taking apixaban and rivaroxaban." Critical Care Medicine 48(1): 241.

[Full Text](#)

*Department of Foundational Medical Studies (BH)*

Mitsui Y, Sadahira T, Watanabe T, Araki M, Maruyama Y, Sato R, Rodrigo AGH, Wada K, Watanabe M, **Chancellor MB** and Nasu Y (2020). "Correlation between lumbar skeletal muscle size and urinary incontinence after radical prostatectomy." LUTS: Lower Urinary Tract Symptoms. ePub Ahead of Print.

[Full Text](#)

*Department of Urology*

Objectives: Urinary incontinence is a major concern after radical prostatectomy because it can decrease quality of life. The aim of the present study was to explore the effect of preoperative skeletal muscle on urinary quality of life after robot-assisted radical prostatectomy. Methods: A total of 762 patients underwent robot-assisted radical prostatectomy. Longitudinal health-related quality of life was evaluated using the Expanded Prostate Cancer Index Composite instrument. The skeletal muscle area at the level of the third lumbar vertebra was assessed preoperatively by computed tomography and was standardized to height to obtain the skeletal muscle index. Reduced skeletal muscle size (RSMS) was defined as a skeletal muscle index  $\leq 53$  or  $\leq 43$  cm<sup>2</sup>/m<sup>2</sup> in patients with a body mass index (BMI)  $\geq 25$  or  $\leq 25$ , respectively. Results: A total of 301 patients were included in this study, of whom 91 were classified as having RSMS (30.2%). Non-RSMS patients exhibited better urinary function at 12 months ( $P = .012$ ) and better urinary continence recovery at 2 weeks and 12 months ( $P = .033$  and  $P = .014$ , respectively) after prostatectomy compared with RSMS patients. Univariate and multivariate analyses identified preoperative RSMS as a significant and independent predictor of urinary incontinence (odds ratio = 1.77,  $P = .028$ ). Conclusions: Patients with RSMS had a lower urinary quality of life compared with non-RSMS patients after robot-assisted radical prostatectomy, and RSMS, independent of age or BMI, was predictive of postoperative urinary incontinence.

Mustafa S, Armstrong J, **Chapman J**, Khaled Z and **Marijanovich N** (2020). "Pericardial fat necrosis: A rare cause of ACUTE chest pain." Journal of the American College of Cardiology 75(11): 2526.

[Full Text](#)

*Department of Internal Medicine*

*OUIWB Medical Student Author*

Mustafa S, Balla AK, **Chapman J** and **Halalau A** (2020). "Acute aortic dissection presenting with transient paraplegia." Journal of the American College of Cardiology 75(11): 2593.

[Full Text](#)

*Department of Internal Medicine*

*OUIWB Medical Student Author*

Navin MC, **Wasserman JA**, **Jain S**, Baughman KR and Laventhal NT (2020). "When do pediatricians call the ethics consultation service? Impact of clinical experience and formal ethics training." AJOB Empirical Bioethics 11(2): 83-90.

[Full Text](#)

*Department of Foundational Medical Studies (OU)*

*OUIWB Medical Student Author*

Background: Previous research shows that pediatricians inconsistently utilize the ethics consultation service (ECS). Methods: Pediatricians in two suburban, Midwestern academic hospitals were asked to reflect on their ethics training and utilization of ECS via an anonymous, electronic survey distributed in 2017 and 2018, and analyzed in 2018. Participants reported their clinical experience, exposure to formal and informal ethics training, use of formal and informal ethics consultations, and potential barriers to formal consultation. Results: Less experienced pediatricians were more likely to utilize formal ethics consultation and more likely to have formal ethics training. The most commonly reported reasons not to pursue formal ECS consultation

were inconvenience and self-reported expertise in pediatric ethics. Conclusions: These results inform ongoing discussions about ethics consultation among pediatricians and the role of formal ethics training in both undergraduate and graduate medical education.

**Nierstedt RT**, Yeahia R and Barnett KM (2020). "Unanticipated myocarditis in a surgical patient treated with pembrolizumab: A case report." *A & A Practice* 14(6): e01177.

[Full Text](#)

*OUWB Medical Student Author*

We report a case of fatal immune checkpoint inhibitor (ICI)-associated myocarditis in a 77-year-old man with metastatic non-small cell lung cancer (NSCLC) who presented for mediport placement at our outpatient surgical center. He denied any cardiac complaints and had a previously normal electrocardiogram (EKG) off treatment. Intraoperatively and postoperatively, he displayed cardiac rhythm abnormalities. The patient was then transferred to a tertiary facility, where he expired within 48 hours. As cancer immunotherapy becomes increasingly prominent, ICI-associated myocarditis should be considered a potentially critical contributor to perioperative cardiac morbidity and mortality.

Nous F, Budde RPJ, Fairbairn TA, Akasaka T, Norgaard BL, Berman DS, **Raff G**, Hurwitz-Koweek LM, Pontone G, Kawasaki T, Sand NPR, Jensen JM, Amano T, Poon M, Ovrehus KA, Sonck J, Rabbat MG, Mullen S, De Bruyne B, Rogers C, Matsuo H, Bax JJ, Leipsic J, Patel MR and Nieman K (2020). "Temporal changes in FFRCT-guided management of coronary artery disease: Lessons from the ADVANCE Registry." *Journal of Cardiovascular Computed Tomography*. ePub Ahead of Print.

[Full Text](#)

*Department of Internal Medicine*

Background: The ADVANCE registry is a large prospective study of outcomes and resource utilization in patients undergoing coronary computed tomography angiography (CCTA) and CT-based fractional flow reserve (FFRCT). As experience with new technologies and practices develops over time, we investigated temporal changes in the use of FFRCT within the ADVANCE registry. Methods: 5083 patients with coronary artery disease (CAD) on CCTA were prospectively enrolled in the ADVANCE registry and were divided into 3 equally sized cohorts based on the temporal order of enrollment per site. Demographics, CCTA and FFRCT findings, and clinical outcomes through 1-year follow-up, were recorded and compared between tertiles. Results: The number of patients with a  $\geq 70\%$  stenosis on CCTA was similar over time (33.6%, 30.9%, and 33.8% for cohort 1-3). The rate of positive FFRCT  $\leq 0.80$  was higher for cohorts 2 (67.3%) and 3 (74.6%) than for cohort 1 (57.1%,  $p < 0.001$ ). Invasive FFR rates decreased from 25.8% to 22.4% between cohort 1 and 3 ( $p = 0.023$ ). Moreover, patients with a FFRCT  $\leq 0.80$  were less frequently referred for invasive coronary angiography (ICA) (from 62.9% to 52.9%,  $p < 0.001$ ), and underwent fewer revascularizations between cohort 1 and 3 (from 41.9% to 32.0%,  $p < 0.001$ ). The prevalence of major events was low (1.2%) and similar between cohorts. Conclusions: Growing experience with FFRCT improved the likelihood of identifying hemodynamically significant CAD and safely reduced the need for ICA and revascularization in patients with anatomically significant disease even in the instance of an abnormal FFRCT.

O'Connell T, **Triska J**, George J, **Safian RD** and **Chinnaiyan K** (2020). "Coronary CTA and CT-derived fractional flow reserve: Gatekeepers to invasive angiography in patients with high pre-test probability of coronary artery disease." *Journal of the American College of Cardiology* 75(11): 1634.

[Full Text](#)

*Department of Internal Medicine*

*OUWB Medical Student Author*

**Oska S**, Zarbo A, Yeager D, **Friedman BJ** and Shwayder T (2020). "Melanoma arising in a patient with ataxia-telangiectasia: A call for full skin examinations in this patient population." *Pediatric Dermatology*. ePub Ahead of Print.

[Full Text](#)

*OUWB Medical Student Author*

Ataxia-telangiectasia (A-T) is an autosomal recessive, multisystem disorder characterized by cerebellar ataxia and oculocutaneous telangiectasias that present in early childhood. Increased incidence of malignancy is also associated with A-T. Hematopoietic malignancies occur most commonly, with a majority being lymphoid

cancers; however, there is a risk for other malignancies, such as breast, gastric, and other solid tumors. Herein, we report the case of a 28-year-old woman with A-T with melanoma.

Pakray A, Walker D, Figacz A, **Kilanowski S, Rhodes C, Doshi S** and Coffey M (2020). "Imaging evaluation of COVID-19 in the emergency department." [Emergency Radiology](#). ePub Ahead of Print.

[Full Text](#)

*Department of Diagnostic Radiology and Molecular Imaging*

**Purpose:** The purpose of this study is to elucidate the chest imaging findings of suspected COVID-19 patients presenting to the emergency department and the relationship with their demographics and RT-PCR testing results. **Methods:** Patients presenting to the ED between March 12 and March 28, 2020, with symptoms suspicious for COVID-19 and subsequent CXR and/or CT exam were selected. Patients imaged for other reasons with findings suspicious for COVID-19 were also included. Demographics, laboratory test results, and history were extracted from the medical record. Descriptive statistics were used to explore the relationship between imaging and these factors. **Results:** A total of 227 patients from the emergency department were analyzed (224 CXRs and 25 CTs). Of the 192 patients with COVID-19 results, 173 (90.1%) had COVID-19 RT-PCR (+). Abnormal imaging (CXR, 85.7% and/or CT, 100%) was noted in 155 (89.6%) of COVID-19 RT-PCR (+) cases. The most common imaging findings were mixed airspace/interstitial opacities (39.8%) on CXR and peripheral GGOs on CT (92%). The most common demographic were African Americans (76.8%). Furthermore, 97.1% of African Americans were RT-PCR (+) compared to 65.8% of Caucasians. **Conclusion:** We found a similar spectrum of thoracic imaging findings in COVID-19 patients as previous studies. The most common demographic were African Americans (76.8%). Furthermore, 97.1% of African Americans were RT-PCR (+) compared to 65.8% of Caucasians. Both CT and CXR can accurately identify COVID-19 pneumonitis in 89.6% of RT-PCR (+) cases, 89.5% of false negatives, and 72.7% of cases with no RT-PCR result.

**Partiali B, Oska S, Barbat A and Folbe A** (2020). "The representation of women and underrepresented minorities in emergency medicine: A look into resident diversity." [American Journal of Emergency Medicine](#). ePub Ahead of Print.

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*Department of Surgery*

*OUIB Medical Student Author*

**Partiali B, Oska S, Barbat A, Sneij J and Folbe A** (2020). "Injuries to the head and face from skateboarding: A 10-year analysis from National Electronic Injury Surveillance System Hospitals." [Journal of Oral and Maxillofacial Surgery](#). ePub Ahead of Print.

[Request Form](#)

*Department of Surgery*

*OUIB Medical Student Author*

**Purpose:** To estimate the incidence of patients presenting to emergency departments (EDs) as a result of facial trauma sustained from skateboarding. **Patients and Methods:** The National Electronic Injury Surveillance System (NEISS) database was queried for skateboard-related head and face fractures, contusions, abrasions, and lacerations from 2009 through 2018. We identified 2,519 reported injuries, extrapolating to a national incidence of 100,201 injuries. Fractures accounted for 14.1% of these visits. There were 355 ED visits for fractures, extrapolating to an estimated 11,893 visits nationally. Entries were tabulated for demographic information, fracture type, mechanism of injury, and disposition. **Results:** Patients sustaining injury to the head and face were aged 16 years, on average, and predominantly male patients (85.9%). Most patients sustaining fractures were male patients (87.9%), with a mean age of 18 years. The most common fracture types included unspecified skull fractures (31%), nasal fractures (29%), and mandibular fractures (18%). The most common mechanism of injury was falling off the skateboard while riding (76.9%). Collisions with motor vehicles also accounted for a substantial proportion of the injuries (7.3%). **Conclusions:** A substantial number of ED visits were a result of skateboarding-related facial trauma. Given the neurologic outcomes of head trauma and functional consequences of facial fractures, especially among adolescents, our findings suggest that injury prevention programs and more aggressive helmet use may be necessary to reduce morbidity and hospitalization.



Parzen JS, Ye H, **Gustafson G, Yan D**, Martinez A, **Chen PY**, Ghilezan M, Sebastian E, Limbacher A and **Krauss DJ** (2020). "Rates of rectal toxicity in patients treated with high dose rate brachytherapy as monotherapy compared to dose-escalated external beam radiation therapy for localized prostate cancer." Radiotherapy and Oncology 147: 123-129.

[Request Form](#)

*Department of Radiation Oncology*

Background: Using a prospectively collected institutional database, we compared rectal toxicity following high dose rate (HDR) brachytherapy as monotherapy relative to dose-escalated external beam radiotherapy (EBRT) for patients with localized prostate cancer. Methods: 2683 patients treated with HDR or EBRT between 1994 and 2017 were included. HDR fractionation was 38 Gy/4 fractions (n = 321), 24 Gy/2 (n = 96), or 27 Gy/2 (n = 128). EBRT patients received a median dose of 75.6 Gy in 1.8 Gy fractions [range 70.2–82.8 Gy], using either 3D conformal or intensity modulated radiotherapy (IMRT). EBRT patients underwent 3D image guidance via an off-line adaptive process. Results: Median follow-up was 7.5 years (7.4 years for EBRT and 7.9 years for HDR). 545 patients (20.3%) received HDR brachytherapy and 2138 (79.7%) EBRT. 69.1% of EBRT patients received IMRT. Compared to EBRT, HDR was associated with decreased rates of acute grade  $\geq 2$  diarrhea (0.7% vs. 4.5%,  $p < 0.001$ ), rectal pain/tenesmus (0.6% vs. 7.9%,  $p < 0.001$ ), and rectal bleeding (0% vs. 1.6%,  $p = 0.001$ ). Rates of chronic grade  $\geq 2$  rectal bleeding (1.3% vs. 8.7%,  $p < 0.001$ ) and radiation proctitis (0.9% vs. 3.3%,  $p = 0.001$ ) favored HDR over EBRT. Rates of any chronic rectal toxicity grade  $\geq 2$  were 2.4% vs. 10.5% ( $p < 0.001$ ) for HDR versus EBRT, respectively. In those treated with IMRT, acute and chronic rates of any grade  $\geq 2$  GI toxicity were significantly reduced but remained significantly greater than those treated with HDR. Conclusions: In appropriately selected patients with localized prostate cancer undergoing radiation therapy, HDR brachytherapy as monotherapy is an effective strategy for reducing rectal toxicity.

Patek P, Corcoran J, **Adams L** and **Khandhar P** (2020). "SARS-CoV-2 infection in a 2-week-old male with neutropenia." Clinical Pediatrics: 9922820920014.

[Full Text](#)

*Department of Emergency Medicine*

*Department of Pediatrics*

**Patel A**, Grafton G, Tita C, Hannawi B, Selektor Y, Chamogeorgakis T, Apostolou D, Lanfear DE, Williams CT, Nemeh HW and Cowger JA (2020). "Survival and predictors of mortality in patients undergoing RVAD explant in IMACS." Journal of Heart and Lung Transplantation 39(4): S25-S26.

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*Department of Internal Medicine*

Purpose: Survival in patients requiring RVAD support is known to be poor. However, outcomes in those undergoing subsequent RVAD explant and predictors of mortality remain unknown. Methods: Of 16482 patients in IMACS, 723 patients had an isolated RVAD (n=29) or BiVAD (n=694) in place. Using Kaplan Meier methods, survival was estimated for the LVAD-only cohort and within the subgroup of RVAD/BiVAD patients with and without RVAD explant. Correlates of mortality in the RVAD explant group were identified with Cox multivariable regression. Results: Within the BiVAD group, 240 patients (33%) had an RVAD explant. Of these, 221 (92%) were performed for RV recovery, 17 (7.1%) for device malfunction and 2 (0.8%) were for other reasons. Survival at 1Y was  $53 \pm 2.0\%$  in the BiVAD group vs.  $82 \pm 0.3\%$  in LVAD-only patients ( $p < 0.0001$ ). Within the BiVAD group, patients undergoing RVAD explant had equivalent survival ( $1Y = 54 \pm 2.5\%$ ) to those with ongoing BiVAD support ( $1Y = 52 \pm 3.4\%$ ,  $p = 0.54$ ). BiVAD patients who died after RVAD explant were older, more likely to be BTT, and had higher preimplant creatinine (table). On multivariable analysis, older age, higher preimplant pulmonary systolic pressure, explant for RVAD dysfunction, and BTT indication predicted death after RVAD explant (table). Within the subgroup of BTT BiVAD (n=51) patients undergoing RVAD explant, survival was only 62% at 3 months. Conclusion: Patients undergoing RVAD explant, even for RV-recovery, have very poor survival. Patients who are transplant eligible with signs of RVAD dysfunction should be given urgent listing status. Rather than RVAD explant, BTT patients with signs of RV recovery may be better served with transplant.

**Pitts DG, Wasserman JA** and **Gould DJ** (2020). "Implementing a successful faculty-driven diversity liaison program: An innovative approach to faculty recruitment at OUWB School of Medicine." Medical Science Educator. ePub Ahead

of Print.

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*Department of Foundational Medical Studies (OU)*

Recruiting a diverse faculty is necessary for fostering inclusive environments at medical schools. The current study describes the creation and implementation of a faculty-led Diversity Liaison Program (DLP). After a faculty-wide assessment of attitudes regarding diversity, volunteer faculty participants in the DLP received training about identifying and mitigating bias in the search process, as well as methods for increasing search pool diversity. Early results show increased hiring of faculty who are women and from underrepresented groups. We conclude by discussing the successes and challenges of the program, which are instructive for other institutions seeking to diversify their faculty.

Pollack CV, Jr., Peacock WF, Bernstein RA, **Clark CL**, Douketis J, Fermann GJ, Fiore GJ, Frost A, Jahromi B, Johnson C, Merli G, Silber S, Villines TC, Fanikos J and Hospital Quality F (2020). "The safety of oral anticoagulants registry (SOAR): A national, ED-based study of the evaluation and management of bleeding and bleeding concerns due to the use of oral anticoagulants." *American Journal of Emergency Medicine*. ePub Ahead of Print.

[Full Text](#)

*Department of Emergency Medicine*

Objective: The Safety of Oral Anticoagulants Registry (SOAR) was designed to describe the evaluation and management of patients with oral anticoagulant (OAC)-related major bleeding or bleeding concerns who present to the emergency department (ED) with acute illness or injury. Patients in the ED are increasingly taking anticoagulants, which can cause bleeding-related complications as well as impact the acute management of related or unrelated clinical issues that prompt presentation. Modifications of emergency evaluation and management due to anticoagulation have not previously been studied. Methods: This was a multicenter observational in-hospital study of patients who were judged to be experiencing an active OAC effect and had (a) an obvious bleeding event or (b) were deemed at risk for serious bleeding spontaneously, after injury, or during an indicated invasive procedure. Diagnostic testing, therapies employed, and clinical outcomes were collected. Results: Thirty-one US hospitals contributed data to SOAR. Of 1513 subjects, acute hemorrhage (AH) qualified 78%, while 22% had a bleeding concern (BC). Warfarin was the index OAC in 37.3%, dabigatran in 13.3%, and an anti-Factor Xa in 49.4%. The most common sites of AH were gastrointestinal (51.0%) and intracranial (26.8%). In warfarin-treated patients, the mean (IQR) presenting INR was 3.1 (2.2, 4.8) in AH patients and 3.9 (2.4, 7.2) in BC patients. Three-fifths of SOAR patients were treated with factor repletion or specific reversal agents, and those patients had a longer length of stay. In addition, seven (0.76%) of the treated patients experienced an in-hospital thrombotic complication; two of these seven died on the index admission, both of fatal pulmonary embolism. Vitamin K was used and dosed inconsistently in both warfarin and NOAC cohorts. Conclusion: Care of anticoagulated patients in the acute care setting is inconsistent, reflecting the diversity of presentation. As the prevalence of OAC use increases with the aging of the US population, further study and targeted educational efforts are needed to drive more evidence-based care of these patients.

Quinn TJ, Daignault-Newton S, Bosch W, Mariados N, Sylvester J, Shah D, Gross E, Hudes R, Beyer D, Kurtzman S, Bogart J, Hsi RA, Kos M, Ellis R, Logsdon M, Zimberg S, Forsythe K, Zhang H, Soffen E, Francke P, Mantz C, DeWeese T, Gay HA, Michalski J and **Hamstra DA** (2020). "Who benefits from a prostate rectal spacer? Secondary analysis of a phase III trial." *Practical Radiation Oncology* 10(3): 186-194.

[Full Text](#)

*Department of Radiation Oncology*

Purpose: Previously a phase III trial of a hydrogel rectal spacer during prostate radiation therapy found decreased toxicity and a clinically significant improvement in bowel quality of life (QOL) at 3 years by the Expanded Prostate Cancer Index. We performed a secondary analysis to identify men less likely to benefit. Methods and Materials: Clinical and dosimetric data for the 222 patients enrolled on the SpaceOAR phase III trial were analyzed. The volume of rectum treated to 70 Gy (V70) and the quantitative analysis of normal tissue effects in the clinic (QUANTEC) rectal dose goals were used as surrogates for clinical benefit and plan quality. Mean bowel QOL was assessed at 15 and 36 months posttreatment and the likelihood of 1x (5 points) or 2x (10 points) minimally important difference changes were assessed. Results: Rectal V70 was correlated with physician scored toxicity (P = .033) and was used as a surrogate for plan quality. There was

no correlation between prostate volume and rectal V70 ( $r = 0.077$ ). Rectal V70 pre- and post-hydrogel was 13% and 3% for the smallest prostates (<40 mL) and 12% and 2% for the largest (>80 mL). The relative reduction in rectal V70 of 78% did not vary by prespacer V70, but the absolute reduction was greater for a higher V70. All spacer plans met the 5 QUANTEC rectal dose constraints, although 92% of control plans met all constraints. At 3 years, those not meeting all QUANTEC goals had a 15.0-point (standard deviation 15.1) decline, control patients meeting QUANTEC goals had a 4.0-point (9.5) decline, and spacer had >0.5 (7.6;  $P < .01$ ). Previous surgery was not correlated with QOL ( $P = .8$ ). Across prognostic groups, including age, body mass index, previous surgery, target volume, or quality of radiation plans, there was no statistically significant heterogeneity in the relative benefit of spacer in decreasing the risk of 1x or 2x the minimally important difference declines. Conclusions: There was little heterogeneity in the likelihood of spacer reducing the risk of declines in bowel QOL across clinical and dosimetric variables. Even for the >95% of plans meeting QUANTEC rectal criteria, hydrogel spacer provided potentially meaningful benefits.

Rusia A, **Bowers T** and **Hanson I** (2020). "Single percutaneous axillary access for impella insertion and PCI in a patient with acute myocardial infarction and cardiogenic shock complicating aorto-bifemoral bypass surgery." Journal of the American College of Cardiology 75(11): 2986.

[Full Text](#)

*Department of Internal Medicine*

Rusthoven CG, Yamamoto M, Bernhardt D, Smith DE, Gao D, Serizawa T, Yomo S, Aiyama H, Higuchi Y, Shuto T, Akabane A, Sato Y, Niranjana A, Faramand AM, Lunsford LD, McInerney J, Tuanquin LC, Zacharia BE, Chiang V, Singh C, Yu JB, Braunstein S, Mathieu D, Touchette CJ, Lee CC, Yang HC, Aizer AA, Cagney DN, Chan MD, Kondziolka D, Bernstein K, Silverman JS, **Grills IS**, Siddiqui ZA, **Yuan JC**, Sheehan JP, Cordeiro D, Nosaki K, Seto T, Deibert CP, Verma V, Day S, Halasz LM, Warnick RE, Trifiletti DM, Palmer JD, Attia A, Li B, Cifarelli CP, Brown PD, Vargo JA, Combs S, Kessel KA, Rieken S, Patel S, Guckenberger M, Andratschke N, Kavanagh BD and Robin TP (2020). "Evaluation of first-line radiosurgery vs whole-brain radiotherapy for small cell lung cancer brain metastases: The FIRE-SCLC cohort study." JAMA Oncology. ePub Ahead of Print.

[Full Text](#)

*Department of Radiation Oncology*

Importance: Although stereotactic radiosurgery (SRS) is preferred for limited brain metastases from most histologies, whole-brain radiotherapy (WBRT) has remained the standard of care for patients with small cell lung cancer. Data on SRS are limited. Objective: To characterize and compare first-line SRS outcomes (without prior WBRT or prophylactic cranial irradiation) with those of first-line WBRT. Design, Setting, and Participants: FIRE-SCLC (First-line Radiosurgery for Small-Cell Lung Cancer) was a multicenter cohort study that analyzed SRS outcomes from 28 centers and a single-arm trial and compared these data with outcomes from a first-line WBRT cohort. Data were collected from October 26, 2017, to August 15, 2019, and analyzed from August 16, 2019, to November 6, 2019. Interventions: SRS and WBRT for small cell lung cancer brain metastases. Main Outcomes and Measures: Overall survival, time to central nervous system progression (TTCP), and central nervous system (CNS) progression-free survival (PFS) after SRS were evaluated and compared with WBRT outcomes, with adjustment for performance status, number of brain metastases, synchronicity, age, sex, and treatment year in multivariable and propensity score-matched analyses. Results: In total, 710 patients (median [interquartile range] age, 68.5 [62-74] years; 531 men [74.8%]) who received SRS between 1994 and 2018 were analyzed. The median overall survival was 8.5 months, the median TTCP was 8.1 months, and the median CNS PFS was 5.0 months. When stratified by the number of brain metastases treated, the median overall survival was 11.0 months (95% CI, 8.9-13.4) for 1 lesion, 8.7 months (95% CI, 7.7-10.4) for 2 to 4 lesions, 8.0 months (95% CI, 6.4-9.6) for 5 to 10 lesions, and 5.5 months (95% CI, 4.3-7.6) for 11 or more lesions. Competing risk estimates were 7.0% (95% CI, 4.9%-9.2%) for local failures at 12 months and 41.6% (95% CI, 37.6%-45.7%) for distant CNS failures at 12 months. Leptomeningeal progression (46 of 425 patients [10.8%] with available data) and neurological mortality (80 of 647 patients [12.4%] with available data) were uncommon. On propensity score-matched analyses comparing SRS with WBRT, WBRT was associated with improved TTCP (hazard ratio, 0.38; 95% CI, 0.26-0.55;  $P < .001$ ), without an improvement in overall survival (median, 6.5 months [95% CI, 5.5-8.0] for SRS vs 5.2 months [95% CI, 4.4-6.7] for WBRT;  $P = .003$ ) or CNS PFS (median, 4.0 months for SRS vs 3.8 months for WBRT;  $P = .79$ ). Multivariable analyses comparing SRS and WBRT, including subset analyses controlling for extracranial metastases and

extracranial disease control status, demonstrated similar results. Conclusions and Relevance: Results of this study suggest that the primary trade-offs associated with SRS without WBRT, including a shorter TTCP without a decrease in overall survival, are similar to those observed in settings in which SRS is already established.

Ryan EH, Ryan CM, Forbes NJ, Yonekawa Y, Wagley S, Mitra RA, Parke DW, Joseph DP, Emerson GG, Shah GK, Blinder KJ, **Capone A, Williams GA**, Elliott D, Gupta OP, Hsu J and Regillo CD (2020). "Primary retinal detachment outcomes study report number 2: Phakic retinal detachment outcomes." *Ophthalmology*. ePub Ahead of Print.

[Full Text](#)

*Department of Ophthalmology*

Purpose: Anatomically similar rhegmatogenous retinal detachments (RRDs) can be treated with scleral buckle (SB), pars plana vitrectomy (PPV), or SB combined with PPV (PPV/SB). This study compares moderately complex phakic primary RRD treated with SB, PPV, or PPV/SB to review anatomic and visual outcomes. Design: Multicenter, retrospective, interventional cohort study. Participants: Data were gathered on all patients from multiple retina practices in the United States with RRD in 2015 and >90 days of follow-up. The cohort of phakic patients with moderately complex RRD was analyzed. Methods: A large and detailed database was generated. Eyes with findings that would bias toward PPV (vitreous hemorrhage, dense cataract, proliferative vitreoretinopathy, giant retinal tear, among others) were excluded. Age <40 years (bias toward SB) was excluded. Comparable cases of moderately complex RRD were then chosen naive to surgeon, surgery, and outcome for subgroup analysis. Main Outcome Measures: Single surgery anatomic success (SSAS), defined as retinal attachment with no other RRD surgery within 90 days, is the main outcome measure. Final visual acuity is the secondary outcome measure. Pearson's chi-square and analysis of variance were used to test treatment effect of surgery type on SSAS and vision. Results: Single surgery anatomic success was noted in 155 of 169 SB cases (91.7%), 207 of 249 PPV cases (83.1%), and 271 of 297 PPV/SB cases (91.2%). Scleral buckle and PPV/SB were superior to PPV for SSAS ( $P = 0.0041$ ). For macula-on or split cases, SB had significantly better visual outcomes than PPV or PPV/SB even after controlling for cataract (cases with minimal cataract at final follow-up or after cataract surgery) ( $P < 0.001$ ). Conclusions: For phakic moderately complex primary RRDs in this study of PPV versus SB versus PPV/SB, SB had the best visual outcomes, and PPV had the worst SSAS outcomes.

Sadleir LG, de Valles-Ibáñez G, King C, Coleman M, Mossman S, Paterson S, **Nguyen J**, Berkovic SF, Mullen S, Bahlo M, Hildebrand MS, Mefford HC and Scheffer IE (2020). "Inherited RORB pathogenic variants: Overlap of photosensitive genetic generalized and occipital lobe epilepsy." *Epilepsia* 61(4): e23-e29.

[Full Text](#)

*OUWB Medical Student Author*

Variants in RORB have been reported in eight individuals with epilepsy, with phenotypes ranging from eyelid myoclonia with absence epilepsy to developmental and epileptic encephalopathies. We identified novel RORB variants in 11 affected individuals from four families. One was from whole genome sequencing and three were from RORB screening of three epilepsy cohorts: developmental and epileptic encephalopathies ( $n = 1021$ ), overlap of generalized and occipital epilepsy ( $n = 84$ ), and photosensitivity ( $n = 123$ ). Following interviews and review of medical records, individuals' seizure and epilepsy syndromes were classified. Three novel missense variants and one exon 3 deletion were predicted to be pathogenic by in silico tools, not found in population databases, and located in key evolutionary conserved domains. Median age at seizure onset was 3.5 years (0.5-10 years). Generalized, predominantly absence and myoclonic, and occipital seizures were seen in all families, often within the same individual (6/11). All individuals with epilepsy were photosensitive, and seven of 11 had cognitive abnormalities. Electroencephalograms showed generalized spike and wave and/or polyspike and wave. Here we show a striking RORB phenotype of overlap of photosensitive generalized and occipital epilepsy in both individuals and families. This is the first report of a gene associated with this overlap of epilepsy syndromes.

Saeed AM, Khairnar R, Sharma AM, Larson GL, Tsai HK, Wang CJ, Halasz LM, **Chinnaiyan P**, Vargas CE and Mishra MV (2020). "Clinical outcomes in patients with recurrent glioblastoma treated with proton beam therapy reirradiation: Analysis of the multi-institutional proton collaborative group registry." *Advances in Radiation Oncology*. ePub Ahead of Print.

[Full Text](#)

*Department of Radiation Oncology*

Purpose: As a means of limiting normal tissue toxicity, proton-beam therapy (PBT) is an emerging radiation modality for glioblastoma (GBM) reirradiation. However, data for recurrent GBM treated with PBT reirradiation is limited. Therefore, we analyzed treatment patterns, toxicities, and clinical outcomes of patients with recurrent GBM treated with PBT reirradiation using the multi-institutional Proton Collaborative Group registry. Methods and Materials: Prospectively collected data for patients with recurrent GBM who underwent PBT while enrolled in Proton Collaborative Group study 01-009 (NCT01255748) were analyzed. We evaluated overall survival (OS), progression-free survival (PFS), and toxicity. Toxicities were scored per the Common Terminology Criteria for Adverse Events, version 4.0. Descriptive statistics were used to report patient, tumor, and treatment characteristics. Multivariable analyses (MVA) for toxicity were conducted using logistic regression. The Kaplan-Meier method was used to calculate OS and PFS. MVA for OS and PFS was conducted using Cox proportional-hazards models. The SAS statistical software was used for the analysis. Results: We identified 45 recurrent patients with GBM who underwent PBT reirradiation between 2012 and 2018. The median time between initial GBM diagnosis and recurrence was 20.2 months. The median follow-up time from PBT reirradiation was 10.7 months. Median PFS was 13.9 months (95% confidence interval [CI], 8.23-20.0 months) and median OS was 14.2 months (95% CI, 9.6-16.9 months) after PBT reirradiation. One patient experienced an acute grade 3 toxicity, 4 patients experienced late grade 3 toxicity (no grade  $\geq 4$  toxicities). MVA revealed that prior surgery was associated with a 91.3% decreased hazard of death (hazard ratio: 0.087; 95% CI, 0.02-0.42;  $P < .01$ ). No explanatory variables were associated with PFS or grade 3 toxicities. Conclusions: This is the largest series to date reporting outcomes for PBT reirradiation of patients with recurrent GBM. Our analysis indicates that PBT is well tolerated and offers efficacy rates comparable with previously reported photon reirradiation.

**Safian RD** (2020). "Invasive fractional flow reserve: Which technology is best?" *Catheterization and Cardiovascular Interventions* 95(6): 1102-1103.

[Full Text](#)

*Department of Internal Medicine*

Key Points Invasive pressure measurements using hyperemic fractional flow reserve (FFR) and nonhyperemic pressure measurements (NHPR) are superior to angiography alone for assessment of 50-90% stenoses. FFR devices using piezoelectric and optical sensors achieve 94% concordance in FFR values; microcatheter designs have more lesion-crossing failures and less pressure drift compared with guidewire designs. Despite the similarity in statistical performance among FFR devices, interventional cardiologists may prefer to use NHPR to avoid the need for adenosine-related side effects, variations in vasodilator response, and limited application in patients with certain clinical and anatomic features.

**Said A, Keeney S, Matka M, Hafeez A, George J and Halalau A** (2020). "Concomitant use of direct oral anticoagulants and aspirin versus direct oral anticoagulants alone in atrial fibrillation and flutter: A retrospective cohort." *BMC Cardiovasc Disord* 20(1): 263.

[Full Text](#)

*Department of Internal Medicine*

Background: The benefit of combining aspirin and direct oral anticoagulants on the reduction of cardiovascular events in atrial fibrillation or flutter is not well studied. We aimed to assess whether concurrent aspirin and direct oral anticoagulant therapy for atrial fibrillation or flutter will result in less coronary, cerebrovascular and systemic ischemic events compared to direct oral anticoagulant therapy alone. Methods: Retrospective study of adult patients between 18 and 100 years old who have nonvalvular atrial fibrillation or flutter and were started on a direct oral anticoagulant (apixaban, rivaroxaban, or dabigatran), between January 1, 2010 and September 1, 2015 within the Beaumont Health System. Exclusions were history of venous thromboembolic disease and use of other antiplatelet therapies such as P2Y12 inhibitors. Patients were classified into two groups based on concurrent aspirin use and observed for a minimum of 2 years. Primary outcome was major adverse cardiac events, defined as acute coronary syndromes, ischemic strokes, and embolic events. Secondary outcomes were bleeding and death. Results: Six thousand four patients were in the final analysis, 57% males and 80% Caucasians, median age 71, interquartile range (63-80). The group exposed to aspirin contained 2908 subjects, and the group unexposed to aspirin contained



3096 subjects. After using propensity scores to balance the baseline characteristics in both groups, the analysis revealed higher rate of major adverse cardiac events in the exposed group compared to the unexposed group, (HR 2.11, 95% CI (1.74-2.56)) with a number needed to harm of 11 (95% CI [9-11]). The rate of bleeding was also higher in the exposed group, (HR 1.30, 95% CI (1.11-1.52)). The rate of death was not statistically different between the groups, (HR 0.87, 95% CI (0.61-1.25)). Conclusions: In this observational analysis of patients with atrial fibrillation and flutter, the concomitant use of direct oral anticoagulants and aspirin was associated with an increased risk of both major adverse cardiac and bleeding events when compared to the use of direct oral anticoagulants alone. These findings underscore the potential harm of this combination therapy when used without a clear indication.

Sandrone S, Berthaud JV, Carlson C, Cios J, Dixit N, Farheen A, Kraker J, Owens JWM, **Patino G**, Sarva H, Weber D and Schneider LD (2020). "Active learning in psychiatry education: Current practices and future perspectives." Front Psychiatry 11: 211.

[Full Text](#)

*Department of Foundational Medical Studies (OU)*

Over the past few decades, medical education has seen increased interest in the use of active learning formats to engage learners and promote knowledge application over knowledge acquisition. The field of psychiatry, in particular, has pioneered a host of novel active learning paradigms. These have contributed to our understanding of the role of andragogy along the continuum of medical education, from undergraduate to continuing medical education. In an effort to frame the successes and failures of various attempts at integrating active learning into healthcare curricula, a group of educators from the A. B. Baker Section on Neurological Education from the American Academy of Neurology reviewed the state of the field in its partner field of medical neuroscience. Herein we provide a narrative review of the literature, outlining the basis for implementing active learning, the novel formats that have been used, and the lessons learned from qualitative and quantitative analysis of the research that has been done to date. While preparation time seems to present the greatest obstacle to acceptance from learners and educators, there is generally positive reception to the new educational formats. Additionally, most assessments of trainee performance have suggested non-inferiority (if not superiority). However, occasional mixed findings point to a need for better assessments of the type of learning that these new formats engender: knowledge application rather than acquisition. Moreover, this field is relatively nascent and, in order to ascertain how best to integrate active learning into psychiatry education, a framework for quantitative outcome assessments is needed going forward.

**Sangal RB** and Sudan N (2020). "Baseline lighter sleep and lower saturation are associated with improved sleepiness and adherence on continuous rather than autotitrating positive airway pressure." Clinical EEG and Neuroscience 51(3): 174-179.

[Full Text](#)

*Department of Family Medicine and Community Health*

The objective was to test whether there were better outcomes on switching from autotitrating positive airway pressure (APAP) to continuous positive airway pressure (CPAP) in a clinic sample of patients with obstructive sleep apnea (OSA). Patients prescribed APAP in 2015-2016 and belonging to a subset characterized by side effects, or suboptimal response or adherence, were advised a switch to CPAP following a CPAP titration polysomnography. The main analysis was for improvement (after switch from APAP to CPAP) in (1) sleepiness, wakefulness inability, and fatigue, using change from baseline in the Sleepiness-Wakefulness Inability and Fatigue Test (delta SWIFT), and Epworth Sleepiness Scale (delta ESS), and (2) adherence using percentage of days with  $\geq 4$ -hour use and whether there was  $\geq 4$ -hour use on  $\geq 70\%$  days. To determine possible predictors for switching, additional analysis was performed for differences at baseline between patients switching and those staying on APAP. A total of 148 patients were switched from APAP to CPAP and had greater improvement in delta SWIFT (5.2 vs 4.1,  $P = .004$ ), greater improvement in delta ESS (3.6 vs 2.9,  $P = .011$ ), and better adherence (79.4% vs 74.3%,  $P = .006$ ) on CPAP than on APAP. More patients were adherent on CPAP than on APAP (83.1% vs 68.9%,  $P = .006$ ). Patients switching had higher baseline arousal index and stage N1 sleep, and lower nadir oxygen saturation, than 96 patients not switching. Thus, there is a subset of patients with better outcomes after switching to CPAP than on APAP. Patients with baseline lighter sleep (indicated by more arousals and stage N1), or greater desaturation, may



be more likely to do better on CPAP than on APAP. CPAP may be the preferable treatment in a significant subset of patients. If APAP is used first anyway, side effects, or suboptimal response or adherence, should lead to consideration of switching to CPAP based on a CPAP titration polysomnography.

Schafer E, Bazydlo M, Schultz L, Park P, Chang V, **Easton RW**, Schwalb J, **Khalil J**, **Perez-Cruet M**, Abdulhak M, Aleem I and Investigators M (2020). "Rates and risk factors associated with 90-day readmission following cervical spine fusion surgery: analysis of the Michigan Spine Surgery Improvement Collaborative (MSSIC) registry." *Spine Journal* 20(5): 708-716.

[Full Text](#)

*Department of Orthopaedic Surgery*

*Department of Neurosurgery*

Background Context: Hospital readmission rates are an increasingly important focus. Identifying patients at risk for readmission can help decrease those rates and thus decrease the overall cost of care. Purpose: We sought to report the rates and the risk factors associated with 90-day hospital readmission after degenerative cervical spine surgery via either an anterior or posterior approach. Study Design: Retrospective review of prospectively collected database Patient Sample: Michigan Spine Surgery Improvement Collaborative (MSSIC) registry Outcome Measures: Hospital readmission at 90 days Methods: The MSSIC registry prospectively enrolls patients undergoing surgery for degenerative cervical spine disease. The registry was queried over a 4-year period to determine patient characteristics and risk factors associated with unplanned readmission at 90 days following degenerative cervical spine fusion surgery through either an anterior or posterior approach. Univariate and multivariate regression modeling was used to compare patient characteristics and odds of readmission. Results: Of 3,762 patients who underwent an anterior approach, 202 (5.4%) were readmitted within 90 days. Of 693 patients who underwent a posterior approach, 85 (12.3%) were readmitted within 90 days. Risk factors associated with increased likelihood of readmission after the anterior approach were male sex (odds ratio [OR] 1.56, confidence interval [CI] 1.10-2.20), American Society of Anesthesiologists class >2 (OR 1.70, CI 1.26-2.30), and increased length of stay (OR 1.10, CI 1.03-1.19). Factors associated with decreased likelihood of readmission after the anterior approach were being independently ambulatory preoperatively (OR 0.59, CI 0.46-0.76) and holding private insurance (OR 0.67, CI 0.50-0.90). A history of previous spine surgery was associated with increased risk of readmission after the posterior approach (OR 1.76, CI 1.37-2.25). Pain was the most common single reason cited for readmission after either approach (9% anterior, 13% posterior). After an anterior approach, common surgical reasons for readmission include new radicular findings (8%), dysphagia (6%), and surgical site hematoma (5%), whereas common medical reasons include pneumonia (7%), infection outside the surgical site (6%), and an electrolyte issue. After a posterior approach, common surgical reasons for readmission after 90 days include surgical site infection (8%) and new radicular findings (6%), whereas common medical reasons include infection outside the surgical site (9%), urinary tract infection (8%), and an abdominal issue (8%). Conclusions: Analysis of a large multicentered, spine-specific database for elective cervical spine fusion surgery demonstrated an unplanned 90-day readmission rate of 5.4% for the anterior approach and 12.3% for the posterior approach. Factors associated with readmission for the anterior approach include male sex, American Society of Anesthesiologists class >2, increased length of stay, holding private insurance, and being ambulatory preoperatively. A history of previous spine surgery was associated with increased odds of readmission after the posterior approach.

Schwartz AM, Anastasio AT, Farley KX, **Boden S**, Wagner ER and Gottschalk MB (2020). "Complications and mortality in patients with chronic kidney disease undergoing total shoulder arthroplasty." *Seminars in Arthroplasty*. ePub Ahead of Print.

[Full Text](#)

*OUWB Medical Student Author*

Introduction: Shoulder arthroplasty (SA) provides pain relief and functional improvement in patients with shoulder arthritis. With increasing incidence of SA, there is a growing effort to risk-stratify these patients to diminish complication rates. The aim of this study is to quantify complication risk, resource utilization, and mortality of patients with chronic kidney disease (CKD) who are undergoing SA (both non-dialysis dependent and dialysis dependent) to identify any disease-severity relationship with delirious SA outcomes. Methods: We queried the Nationwide Inpatient Sample database for patients with and without diagnosis of

CKD SA from 2007 to 2015. Additional patient comorbidities were stratified using the Elixhauser comorbidity index. Outcomes of interest include mortality, non-surgical and surgical complications, and resource utilization metrics. Multivariate logistical regression was run to determine odds ratios for development of these complications in the non-dialysis dependent (NDD) and dialysis-dependent cohort (DD). Results: Between 2007 and 2015, the prevalence of patients with CKD undergoing SA more than doubled. On univariate analysis, mortality, non-surgical and surgical complications, and all resource-utilization metrics were increased in CKD patients, with a direct disease-severity-dependent relationship; the rate of inpatient mortality in the DD cohort after SA was 32 times higher than patients without CKD ( $p < 0.001$ ). The association between CKD and complication rates, and the disease-severity relationship was conserved on multivariate analysis. The OR for mortality in the DD cohort was 10.6 ( $p < 0.001$ ). Conclusion: Patients with CKD undergoing SA had a far greater risk of mortality, development of postoperative surgical and non-surgical complications, and resource utilization metrics during the postoperative inpatient stay after SA. CKD is an independent risk for a detrimental postoperative course after SA, and this relationship is worsened in patients requiring dialysis. The CKD population represents a potentially hazardous candidate for elective SA.

**Seymour ZA, Hamstra DA,** Daignault-Newton S, Bosch W, Michalski J, Gay HA and Pinkawa M (2020). "Long-term follow-up after radiotherapy for prostate cancer with and without rectal hydrogel spacer: A pooled prospective evaluation of bowel-associated quality of life." *BJU International*. ePub Ahead of Print.

[Full Text](#)

*Department of Radiation Oncology*

Objective: To evaluate the long-term bowel-associated quality of life (QOL) in men after radiotherapy (RT) for prostate cancer with and without the use of rectal hydrogel spacer. Patients and Methods: The patients' QOL was examined using the Expanded Prostate Cancer Index Composite (EPIC) and mean changes from baseline in EPIC domains were evaluated. A total of 215 patients from a randomised multi-institutional trial of RT, with or without hydrogel spacer, with a QOL endpoint were pooled with 165 non-randomised patients from a single institution with prospective QOL collection in patients with or without hydrogel spacer. The proportions of men with minimally important differences (MIDs) relative to pre-treatment baseline in the bowel domain were tested using repeated measure logistic models with a pre-specified threshold for clinically significant declines ( $\geq 5$  equivalent to MIDx1 and  $\geq 10$  equivalent to MIDx2). Results: A total of 380 men were evaluated (64% with spacer and 36% without) with QOL data being available for 199 men with  $> 24$  months of follow-up [median (range) 39.5 (31-71.4) months]. Treatment with spacer was associated with less decline in average long-term bowel QOL (89.4 for control and 94.7 for spacer) with differences at  $> 24$  months meeting the threshold of a MID difference between cohorts (bowel score difference from baseline: control = -5.1, spacer = 0.3, difference = -5.4;  $P < 0.001$ ). When evaluated over time men without spacer were more likely to have MIDx1 (5 points) declines in bowel QOL ( $P = 0.01$ ). At long-term follow-up MIDx1 was 36% without spacer vs 14% with spacer ( $P < 0.001$ ; odds ratio [OR] 3.5, 95% CI 1.7-6.9) while MIDx2 was seen in 19% vs 6% ( $P = 0.008$ ; OR 3.6, 95% CI 1.4-9.1). The use of spacer was associated with less urgency with bowel movements ( $P = 0.002$ ) and fewer loose stools ( $P = 0.009$ ), as well as less bother with urgency ( $P = 0.007$ ) and frequency of bowel movements ( $P = 0.009$ ). Conclusions: In this pooled analysis of QOL after prostate RT with up to 5 years of follow-up, use of a rectal spacer was associated with preservation of bowel QOL. This QOL benefit was preserved with long-term follow-up.

Shields RA, **Lee IJ, Brown MM,** Dong LK, Lee R, Wa CA and **Hassan TS** (2020). "Clinical course and characteristics of eyes that developed recurrent episodes of endophthalmitis." *Ophthalmology Retina*. ePub Ahead of Print.

[Request Form](#)

*Department of Ophthalmology*

*OUWB Medical Student Author*

Purpose: Infectious endophthalmitis is a devastating, yet rare complication following intraocular surgery, trauma, and systemic illness. Given its rare incidence, few patients would be expected to have more than one episode of infectious endophthalmitis in their lifetime. We reviewed our patients who were diagnosed with, and treated for, at least two separate episodes of endophthalmitis. Design: A retrospective, consecutive case series was conducted of patients managed at Associated Retinal Consultants P.C. (Royal Oak, Michigan) from January 2013 thru December 2019. Subjects: Patients were identified with the diagnosis of endophthalmitis by ICD-9/10 codes. METHODS: Those diagnosed and then treated with either a vitreous tap/intravitreal

injection of antibiotics or pars plana vitrectomy at least two times were included. Those treated multiple times for the same episode of endophthalmitis were excluded. Main Outcome Measures: Etiology and risk factors for recurrent endophthalmitis. Results: Charts of 535 patients were reviewed and 12 patients met inclusion criteria. The median age at initial presentation was 72.5 years and 33.3% were men. Eight of the 12 (66%) patients had recurrent endophthalmitis in the same eye and 4 (33%) had separate episodes in different eyes. The average time between episodes was 604 days (range 90-2366 days). The average follow-up from the second episode was 492 days (range 119 - 1185 days). The most common etiology for both the first and second episode was recent intravitreal injection (50% and 58.3%) followed by surgery-associated (41.6% and 33.3%). Eight patients (75%) had the same etiology for their first and second episodes. Of the 24 recorded episodes of endophthalmitis, cultures were positive in 41.6% with coagulase-negative Staphylococcus being the most common bacteria identified. Conclusions: Recurrent endophthalmitis is rare and most commonly seen after intravitreal injections. The majority of cases in this series were culture negative. Each successive episode of endophthalmitis was associated with a worse final visual outcome. The cumulative number of intravitreal injections may be an independent risk factor for recurrent post-injection endophthalmitis.

Shields RA, **Oska SR**, Farley ND and **Randhawa S** (2020). "Influenza-induced acute macular neuroretinopathy with cerebral involvement in a ten-year-old boy." *Ophthalmic Surgery Lasers and Imaging Retina* 51(5): 293-297.

[Request Form](#)

*Department of Ophthalmology*

*OUWB Medical Student Author*

A 10-year-old male presented with 1-week duration of painless bilateral central vision loss after having been diagnosed with influenza A. Optical coherence tomography revealed superficial retinal nerve fiber layer infarcts, hyperreflectivity of the inner nuclear layer consistent with paracentral acute middle maculopathy (PAMM), and outer nuclear layer hyperreflectivity and disruption of the ellipsoid zone suggesting acute macular neuroretinopathy (AMN). Brain MRI revealed enhancement of the right basal ganglia consistent with focal encephalitis. He was diagnosed with presumed influenza-induced leukocytoclastic vasculitis (LCV) and treated with intravenous steroids. Influenza-induced LCV is a rare phenomenon and can present with AMN, PAMM, and encephalitis.

Shore ND, Antonarakis ES, Cookson MS, Crawford ED, Morgans AK, Albala DM, **Hafron J**, Harris RG, Saltzstein D, Brown GA, Henderson J, Lowentritt B, Spier JM and Concepcion R (2020). "Optimizing the role of androgen deprivation therapy in advanced prostate cancer: Challenges beyond the guidelines." *Prostate* 80(6): 527-544.

[Full Text](#)

*Department of Urology*

Background: For specific clinical indications, androgen deprivation therapy (ADT) will induce disease prostate cancer (PC) regression, relieve symptoms and prolong survival; however, ADT has a well-described range of side effects, which may have a detrimental effect on the patient's quality of life, necessitating additional interventions or changes in PC treatment. The risk-benefit analysis for initiating ADT in PC patients throughout the PC disease continuum warrants review. Methods: A 14-member panel comprised of urologic and medical oncologists were chosen for an expert review panel, to provide guidance on a more judicious use of ADT in advanced PC patients. Panel members were chosen based upon their academic and community experience and expertise in the management of PC patients. Four academic members of the panel served as group leaders; the remaining eight panel members were from Large Urology Group Practice Association practices with proven experience in leading their advanced PC clinics. The panel members were assigned to four separate working groups, and were tasked with addressing the role of ADT in specific PC settings. Results: This article describes the practical recommendations of an expert panel for the use of ADT throughout the PC disease continuum, as well as an algorithm summarizing the key recommendations. The target for this publication is all providers (urologists, medical oncologists, radiation oncologists, or advanced practice providers) who evaluate and manage advanced PC patients, regardless of their practice setting. Conclusion: The panel has provided recommendations for monitoring PC patients while on ADT, recognizing that PC patients will progress despite testosterone suppression and, therefore, early identification of conversion from castrate-sensitive to castration resistance is critical. Also, the requirement to both identify and mitigate side effects of ADT as well as the importance of quality of life maintenance are essential to the optimization of patient care, especially as more combinatorial therapeutic strategies with ADT continue to

emerge.

Siljander MP, Whaley JD, Koueiter DM, Alsaleh M and **Karadsheh MS** (2020). "Length of stay, discharge disposition, and 90-day complications and revisions following primary total hip arthroplasty: A comparison of the direct anterior, posterolateral, and direct superior approaches." Journal of Arthroplasty 35(6): 1658-1661.

[Request Form](#)

*Department of Orthopaedic Surgery*

Background: The direct anterior (DA) approach is becoming increasingly popular for primary total hip arthroplasty (THA). The aim of this study is to evaluate early postoperative complication and revision rates based on surgical approach, comparing DA, posterolateral (PL), and direct superior (DS) approaches. Methods: After institutional review board approval, a total joint arthroplasty database from a single institution was used to identify all patients who underwent elective primary THA between July 2013 and November 2017 with a DA, PL, or DS hip approach. Patients were followed for complications out to 90 days postsurgery. Patients were divided into groups based on surgical approach and compared on length of stay, discharge disposition, and 90-day complication and revision rates. Results: There were 5341 THA procedures performed, with 3162 PL, 1846 DA, and 333 DS approaches. Length of stay was shorter for DS (1.7 +/- 0.9 days) and DA (1.8 +/- 0.9 days) than for PL approaches (2.3 +/- 1.4 days,  $P < .001$ ). The DS approach had the highest rate of home discharges (93.1%), but the highest short-term revision rate (1.5%,  $P = .011$ ). The DA approach had the lowest intraoperative fracture rate (0.1%,  $P = .019$ ) but the highest incidence of postoperative fractures (1.3%,  $P = .021$ ). There were no differences in readmission ( $P = .056$ ), 90-day events ( $P = .062$ ), emergency department visits ( $P = .210$ ), dislocations ( $P = .090$ ), combined perioperative fractures ( $P = .289$ ), venous thromboembolic events ( $P = .059$ ), or acute infection rates ( $P = .287$ ). Conclusion: In the era of bundled payments, the DA, PL, and DS approaches can all be effectively used. Level of Evidence: Level III; retrospective comparative study.

Starke RM, McCarthy DJ, Chen CJ, Kano H, McShane BJ, Lee J, Patibandla MR, Mathieu D, Vasas LT, Kaufmann AM, Wang WG, **Grills IS**, Cifarelli CP, Paisan G, Vargo J, Chytka T, Janouskova L, Feliciano CE, Sujjantararat N, Matouk C, Chiang V, Hess J, Rodriguez-Mercado R, Tonetti DA, Lunsford LD and Sheehan JP (2020). "Hemorrhage risk of cerebral dural arteriovenous fistulas following Gamma Knife radiosurgery in a multicenter international consortium." Journal of Neurosurgery 132(4): 1209-1217.

[Request Form](#)

*Department of Radiation Oncology*

Objective: The authors performed a study to evaluate the hemorrhagic rates of cerebral dural arteriovenous fistulas (dAVFs) and the risk factors of hemorrhage following Gamma Knife radiosurgery (GKRS). Methods: Data from a cohort of patients undergoing GKRS for cerebral dAVFs were compiled from the International Radiosurgery Research Foundation. The annual posttreatment hemorrhage rate was calculated as the number of hemorrhages divided by the patient-years at risk. Risk factors for dAVF hemorrhage prior to GKRS and during the latency period after radiosurgery were evaluated in a multivariate analysis. Results: A total of 147 patients with dAVFs were treated with GKRS. Thirty-six patients (24.5%) presented with hemorrhage. dAVFs that had any cortical venous drainage (CVD) (OR = 3.8,  $p = 0.003$ ) or convexity or torcula location (OR = 3.3,  $p = 0.017$ ) were more likely to present with hemorrhage in multivariate analysis. Half of the patients had prior treatment (49.7%). Post-GKRS hemorrhage occurred in 4 patients, with an overall annual risk of 0.84% during the latency period. The annual risks of post-GKRS hemorrhage for Borden type 2-3 dAVFs and Borden type 2-3 hemorrhagic dAVFs were 1.45% and 0.93%, respectively. No hemorrhage occurred after radiological confirmation of obliteration. Independent predictors of hemorrhage following GKRS included nonhemorrhagic neural deficit presentation (HR = 21.6,  $p = 0.027$ ) and increasing number of past endovascular treatments (HR = 1.81,  $p = 0.036$ ). Conclusions: Patients have similar rates of hemorrhage before and after radiosurgery until obliteration is achieved. dAVFs that have any CVD or are located in the convexity or torcula were more likely to present with hemorrhage. Patients presenting with nonhemorrhagic neural deficits and a history of endovascular treatments had higher risks of post-GKRS hemorrhage.

**Sun Q**, Avallone L, Stolze B, Araque KA, Ozarda Y, Jonklaas J, Parikh T, Welsh K, Masika L and Soldin SJ (2020). "Demonstration of reciprocal diurnal variation in human serum T3 and rT3 concentration demonstrated by mass spectrometric analysis and establishment of thyroid hormone reference intervals." Therapeutic Advances in

Endocrinology and Metabolism 11: 1-7.

[Full Text](#)

*Department of Pathology*

Background: There has been a wide range of reference intervals proposed in previous literature for thyroid hormones due to large between-assay variability of immunoassays, as well as lack of correction for collection time. We provided the diurnal reference intervals for five thyroid hormones, namely total thyroxine (TT4), total triiodothyronine (TT3), free thyroxine (FT4), free triiodothyronine (FT3), and reverse T3 (rT3), measured in serum samples of healthy participants using a liquid chromatography/tandem mass spectrometry (LC-MS/MS) method. Methods: Couplet serum samples (a.m. and p.m.) were collected from 110 healthy females and 49 healthy males. Healthy volunteers were recruited from four participating centers between 2016 and 2018. Measurements of thyroid hormones were obtained by LC-MS/MS analysis. Results: Our study revealed significant uptrend in AM to PM FT4 ( $p < 0.0001$ ) samples, downtrend in AM to PM TT3 ( $p = 0.0004$ ) and FT3 samples ( $p < 0.0001$ ), and AM to PM uptrend in rT3 samples ( $p < 0.0001$ ). No difference was observed for TT4 between AM and PM. No significant sex differences were seen for any of the five thyroid hormones. Conclusion: When diagnosing thyroid disorders, it is important to have accurate measurement of thyroid hormones, and to acknowledge the diurnal fluctuation found, especially for FT3. Our study highlights the importance of standardization of collection times and implementation of LC-MS/MS in thyroid hormone measurement.

**Swanberg SM**, Thielen J and **Bulgarelli N** (2020). "Faculty knowledge and attitudes regarding predatory open access journals: A needs assessment study." Journal of the Medical Library Association 108(2): 208-218.

[Full Text](#)

*Department of Foundational Medical Studies (OU)*

*Medical Library*

Objective: The purpose of predatory open access (OA) journals is primarily to make a profit rather than to disseminate quality, peer-reviewed research. Publishing in these journals could negatively impact faculty reputation, promotion, and tenure, yet many still choose to do so. Therefore, the authors investigated faculty knowledge and attitudes regarding predatory OA journals. Methods: A twenty-item questionnaire containing both quantitative and qualitative items was developed and piloted. All university and medical school faculty were invited to participate. The survey included knowledge questions that assessed respondents' ability to identify predatory OA journals and attitudinal questions about such journals. Chi-square tests were used to detect differences between university and medical faculty. Results: A total of 183 faculty completed the survey: 63% were university and 37% were medical faculty. Nearly one-quarter (23%) had not previously heard of the term "predatory OA journal." Most (87%) reported feeling very confident or confident in their ability to assess journal quality, but only 60% correctly identified a journal as predatory, when given a journal in their field to assess. Chi-square tests revealed that university faculty were more likely to correctly identify a predatory OA journal ( $p=0.0006$ ) and have higher self-reported confidence in assessing journal quality, compared with medical faculty ( $p=0.0391$ ). Conclusions: Survey results show that faculty recognize predatory OA journals as a problem. These attitudes plus the knowledge gaps identified in this study will be used to develop targeted educational interventions for faculty in all disciplines at our university.

Swank KR, Furness JE, **Baker EA**, Gehrke CK, Biebelhausen SP and **Baker KC** (2020). "Metabolomic profiling in the characterization of degenerative bone and joint diseases." Metabolites 10(6): 223.

[Full Text](#)

*Department of Orthopaedic Surgery*

Osteoarthritis and inflammatory arthropathies are a cause of significant morbidity globally. New research elucidating the metabolic derangements associated with a variety of bone and joint disorders implicates various local and systemic metabolites, which further elucidate the underlying molecular mechanisms associated with these destructive disease processes. In osteoarthritis, lactic acid metabolism has been implicated in disease development, both locally and systemically. Several series of rheumatoid arthritis patients have demonstrated overlapping trends related to histidine and glyceric acid, while other series showed similar results of increased cholesterol and glutamic acid. Studies comparing osteoarthritis and rheumatoid arthritis reported elevated gluconic acid and glycolytic- and tricarboxylic acid-related substrates in patients with osteoarthritis, while lysosphingolipids and cardiolipins were elevated only in patients with



rheumatoid arthritis. Other bone and joint disorders, including osteonecrosis, intervertebral disc degeneration, and osteoporosis, also showed significant alterations in metabolic processes. The identification of the molecular mechanisms of osteoarthritis and inflammatory arthropathies via metabolomics-based workflows may allow for the development of new therapeutic targets to improve the quality of life in these patient populations.

Taylor DG, Janssen A, Ding DL, Xu ZY, Mehta GU, Liscak R, Kano H, Kosak M, Martinez-Moreno N, Hobbs L, Chen CJ, **Grills IS**, Mathieu D, Lunsford LD, Vance ML and Sheehan JP (2020). "Whole sella vs targeted stereotactic radiosurgery for acromegaly: A multicenter matched cohort study." *Neurosurgery* 86(5): 656-664.

[Request Form](#)

*Department of Radiation Oncology*

Background: Targeted stereotactic radiosurgery (SRS) with sparing of the residual pituitary is the traditional radiosurgical method for pituitary adenomas. Whole-sella SRS is an alternative choice for radiologically indeterminate or large adenomas, the safety and efficacy of which has yet to be determined. Objective: To determine if whole-sella SRS in acromegaly would have comparable radiographic and biochemical control to targeted SRS. We performed a multicenter, retrospective matched cohort study to compare outcomes between groups. Methods: We conducted a retrospective review of acromegalic patients who underwent SRS from 1990 to 2016 at 10 centers participating in the International Radiosurgery Research Foundation. Whole-sella and targeted SRS patients were then matched in a 1:1 ratio. Results: A total of 128 patients were eligible for inclusion. Whole-sella patients had a higher pre-SRS random serum growth hormone, larger treatment volume, and higher maximum point dose to the optic apparatus. The rates of initial/durable endocrine remission, new loss of pituitary function, and new cranial neuropathy were similar between groups. Mortality and new visual deficit were higher in the whole-sella cohort, though not statistically significant. Conclusion: There was no difference in biochemical remission or recurrence between treatment groups. Although not statistically significant, the higher rates of tumor regression and lower rates of mortality and new visual deficit may suggest consideration of targeted SRS over whole-sella SRS in acromegaly treatment. Further research is needed to determine the association between visual deficits and mortality with whole-sella SRS.

Tejeda-Franco CD, Valadez-Jimenez VM, Hernandez-Lopez X, **Ysunza PA**, Mena-Ramirez ME, Garcia-Zalapa RA and Miranda-Duarte A (2020). "Hearing aid use and auditory verbal therapy improve voice quality of deaf children." *Journal of Voice* 34(2): 301.e7-301.e11.

[Full Text](#)

*Department of Physical Medicine & Rehabilitation*

Background: Adequate phonation is self-regulated by auditory feedback. Children with bilateral profound hearing loss (PHL) lack this feedback resulting in abnormal voice. Adequate hearing aid use and auditory-verbal therapy (AVT) may improve voice quality in deaf children. Objective: To study whether hearing aid use and AVT approach improve acoustic parameters of voice of children with bilateral PHL. Materials and methods. Nineteen children with bilateral PHL were studied. Age range 2-5 years ( $X = 53.04$  months;  $SD = 9.54$ ). All children were fitted with hearing aids according to auditory testing and they underwent a 1-year auditory habilitation period using the AVT approach. Acoustic analysis of voice including FO, shimmer, and jitter was performed at the onset and at the end of the auditory habilitation period. Final acoustic data were compared to a matched control group of 19 children, age range 2-5 years ( $X = 52.85$ ;  $SD = 9.74$ ) with normal hearing. Results: Mean fundamental frequency (FO) was significantly increased after AVT intervention Shimmer and jitter significantly ( $P < 0.05$ ) improved after the intervention period. However, despite the improvements, mean FO at the end of the intervention period was still significantly ( $P < 0.05$ ) decreased as compared to controls. Also, mean shimmer and jitter at the end of the habilitation period were still significantly ( $P < 0.05$ ) higher as compared to controls. Conclusions: The results of this preliminary study suggest that hearing aid use and auditory habilitation with AVT approach improved acoustic voice parameters of children with PHL. However, acoustic parameters persisted abnormal as compared to matched normal hearing controls. AVT approach and regular hearing aid use seem to be safe and reliable clinical tools for improving voice quality of children with PFL.

Thompson AB, Quinn TJ, Siddiqui ZA, Almahariq MF, **Grills IS** and **Stevens CW** (2020). "Addition of radiotherapy to



surgery and chemotherapy improves survival in localized malignant pleural mesothelioma: A Surveillance, Epidemiology, and End Results (SEER) study." [Lung Cancer](#) 146: 120-126.

[Full Text](#)

*Department of Radiation Oncology*

Introduction: Malignant pleural mesothelioma (MPM) is a devastating disease with poor survival outcomes for most patients. Optimizing therapeutic approaches is thus vital, but has been hampered by a dearth of randomized trials to guide decision making. We used a population-level database to evaluate the impact of radiotherapy as a component of trimodality therapy on overall survival (OS) in MPM. Methods: We retrospectively reviewed the SEER Radiation/Chemotherapy database for patients with MPM who received surgery and chemotherapy, with or without radiotherapy. A propensity score-matched analysis with inverse probability of treatment weighting (IPTW) was performed. Weight-adjusted univariate KM analysis was performed and doubly robust, IPTW-adjusted multivariable cox proportional hazards regression modeling was also performed to quantify the effect of radiotherapy on OS in trimodality therapy for MPM. Results: 1015 patients were identified. 678 patients received surgery and chemotherapy, and 337 patients received trimodality therapy. For patients with localized disease, OS was significantly improved with trimodality therapy (HR 0.56, CI 0.4 - 0.8, p=0.001), which persisted with IPTW adjustment (HR 0.65, CI 0.49 - 0.95, p=0.0248). No significant benefit was seen for patients with regional or distant disease. On multivariate analysis, positive predictors of survival after IPTW adjustment were female sex, diagnosis after 2005, and left-sided disease. Conclusions: These findings support a significant benefit to OS by incorporating radiotherapy as a component of trimodality therapy for patients with localized MPM compared to only surgery and chemotherapy. It does not provide a significant overall survival benefit for patients with regional or metastatic disease.

Thompson PD, Baggish AL, **Franklin B**, Jaworski C and Riebe D (2020). "American College of Sports Medicine expert consensus statement to update recommendations for screening, staffing, and emergency policies to prevent cardiovascular events at health fitness facilities." [Current Sports Medicine Reports](#) 19(6): 223-231.

[Full Text](#)

*Department of Internal Medicine*

Tomlinson MS, Santos HP, Stewart JR, Joseph R, Leviton A, Onderdonk AB, Kuban KCK, Heeren T, O'Shea TM, Fry RC, Shah B, Singh R, Van Marter L, Martin C, Ware J, Cole C, Perrin E, Bednarek F, Frazier JA, Ehrenkranz R, **Benjamin J**, O'Shea TM, Bose C, Warner D, Engelke S, Poortenga M, Pastyrnak S, Karna P, Paneth N, Lenski M, Schreiber M, Hunter S, Msall M, Batton D, **Klarr J**, Christianson K, Klein D, Pimental M, Hallisey C, Coster T, Nysten E, Neger E, Mattern K, Venuti L, Powers B, Foley A, Williams J, Romano E, Hiatt D, Peters N, Brown P, Anusinha E, Bose G, Wereszczak J, Bernhardt J, Adams J, Wilson D, Darden-Saad N, Sutton D, Rathbun J, Miras K, Weiland D, Yoon G, Ramoskaite R, Wiggins S, Washington K, Martin R, Prendergast B, Kring B, Smith A, McQuiston S, Butler S, Wilson R, McGhee K, Lee P, Asgarian A, Sadhwani A, Henson B, Keller C, Walkowiak J, Barron S, Miller A, Dessureau B, Wood M, Damon-Minow J, Romano E, Mayes L, Tsatsanis K, Chawarska K, Kim S, Dieterich S, Bearrs K, Waldrep E, Friedman J, Hounshell G, Allred D, Helms R, Whitley L, Stainback G, Bostic L, Jacobson A, McKeeman J, Meyer E, Pastyrnak S, Price J, Lloyd M, Plesha-Troyke S, Scott M, Solomon KM, Brooklier K, Vogt K and Investigators ES (2020). "Neurocognitive and social-communicative function of children born very preterm at 10 years of age: Associations with microorganisms recovered from the placenta parenchyma." [Journal of Perinatology](#) 40(2): 306-315.

[Full Text](#)

*Department of Pediatrics*

*Department of Emergency Medicine*

Objective: Infection of the placenta has been associated with preterm birth as well as neurocognitive impairment. This study aimed to determine whether specific bacterial species in the placenta of extremely preterm pregnancies are associated with neurological deficits later in life. Study Design: Using data from 807 children in the ELGAN study the risks of a low score on six neurological assessments in relation to 15 different microbes were quantified with odds ratios. Results: The presence of certain microbial species in the placenta was associated with lower scores on numerical and oral language assessments. *Lactobacillus* sp. was associated with decreased risk of a low oral language score and a composite measure of IQ and executive function. Conclusion: Placental microorganisms were associated with neurocognitive, but not social-communicative, outcomes at age 10. In contrast, the presence of the anti-inflammatory *Lactobacillus* sp. in

the placenta was associated with a lower risk of impaired neurocognitive functions.

**Topf JM** (2020). "Introduction: Social media and medical education come of age." *Seminars in Nephrology* 40(3): 247-248.

[Full Text](#)

*Department of Internal Medicine*

Tran AQ, Zhang-Nunes SX, Cahill K, Alabiad CR, Shriver EM, Ho T, Weinberg DA, Couch SM, **Schlachter DM, Nguyen J** and Wester ST (2020). "Thyroid eye disease with choroidal folds." *Orbit*. ePub Ahead of Print.

[Full Text](#)

*Department of Ophthalmology*

*OUWB Medical Student Author*

**Purpose:** To determine the clinical course of patients with chorioretinal folds (CRF) in thyroid eye disease (TED). **Methods:** A multi-center retrospective case series of patients with TED who developed CRF. **Results:** Ten patients (17 eyes) with CRF related to TED were identified. The mean age of presentation was  $59.3 \pm 8.3$  years old. The majority of patients were male (70%), hyperthyroid (70%), hyperopic (53%), had a history of radioactive iodine (60%), and currently on methimazole treatment (30%). Three patients (3 eyes) had unilateral involvement of CRF with bilateral TED. The average clinical activity score was  $3.6 \pm 2.1$  at the time of presentation. The most commonly enlarged extraocular muscles were medial (76%), inferior (64%), superior (64%) and lateral rectus (35%). Compressive optic neuropathy was seen in 47% of eyes. Treatment included oral prednisone (70%), orbital decompression (59%), thyroidectomy (20%) and tocilizumab (10%). The CRF did not resolve over a follow up period of  $24.7 \pm 23.7$  months in 70% of eyes. There was no significant difference in average axial length ( $25.7 \pm 4.9$  mm) and optic nerve to optic strut distance ( $37.8 \pm 3.9$  mm) between patients with CRF and the eight age- and sex-matched TED control patients without CRF ( $p = 0.81$  and  $0.65$  respectively). A univariable and multivariable analysis found an enlarged inferior rectus as a factor in TED patients with persistent CRF. **Conclusions:** CRF are often an indicator of visually threatening situations and often do not resolve despite treatment of TED.

Tung NM, Boughey JC, Pierce LJ, Robson ME, Bedrosian I, Dietz JR, Dragun A, Gelpi JB, Hofstatter EW, Isaacs CJ, Jatoi I, Kennedy E, Litton JK, Mayr NA, Qamar RD, Trombetta MG, Harvey BE, Somerfield MR and **Zakalik D** (2020).

"Management of hereditary breast cancer: American Society of Clinical Oncology, American Society for Radiation Oncology, and Society of Surgical Oncology guideline." *Journal of Clinical Oncology* 38(18): 2080-2106.

[Full Text](#)

*Department of Internal Medicine*

**Purpose:** To develop recommendations for management of patients with breast cancer (BC) with germline mutations in BC susceptibility genes. **Methods:** The American Society of Clinical Oncology, American Society for Radiation Oncology, and Society of Surgical Oncology convened an Expert Panel to develop recommendations based on a systematic review of the literature and a formal consensus process. **Results:** Fifty-eight articles met eligibility criteria and formed the evidentiary basis for the local therapy recommendations; six randomized controlled trials of systemic therapy met eligibility criteria. **Recommendations:** Patients with newly diagnosed BC and BRCA1/2 mutations may be considered for breast-conserving therapy (BCT), with local control of the index cancer similar to that of noncarriers. The significant risk of a contralateral BC (CBC), especially in young women, and the higher risk of new cancers in the ipsilateral breast warrant discussion of bilateral mastectomy. Patients with mutations in moderate-risk genes should be offered BCT. For women with mutations in BRCA1/2 or moderate-penetrance genes who are eligible for mastectomy, nipple-sparing mastectomy is a reasonable approach. There is no evidence of increased toxicity or CBC events from radiation exposure in BRCA1/2 carriers. Radiation therapy should not be withheld in ATM carriers. For patients with germline TP53 mutations, mastectomy is advised; radiation therapy is contraindicated except in those with significant risk of locoregional recurrence. Platinum agents are recommended versus taxanes to treat advanced BC in BRCA carriers. In the adjuvant/neoadjuvant setting, data do not support the routine addition of platinum to anthracycline- and taxane-based chemotherapy. Poly (ADP-ribose) polymerase (PARP) inhibitors (olaparib and talazoparib) are preferable to nonplatinum single-agent chemotherapy for treatment of advanced BC in BRCA1/2 carriers. Data are insufficient to recommend PARP inhibitor use in the early setting or in moderate-penetrance carriers.

Ullah W, Sattar Y, Darmoch F, Al-Khadra Y, Mir T, Ajmal R, Moussa-Pacha H, **Glazier J**, Asfour A, Gardi D and Alraies MC (2020). "The impact of peripheral arterial disease on patients with mechanical circulatory support." [IJCV Heart & Vasculature](#) 28: 100509.

[Full Text](#)

*Department of Internal Medicine*

Background: Left ventricular assist devices (LVAD) are indicated as bridging or destination therapy for patients with advanced (Stage D) heart failure and reduced ejection fraction (HFrEF). Due to the clustering of the mutual risk factors, HFrEF patients have a high prevalence of peripheral arterial disease (PAD). This, along with the fact that continuous flow LVAD influence shear stress on the vasculature, can further deteriorate the PAD. Methods: We queried the National Inpatient Sample (NIS) database (2002-2014) to identify the burden of pre-existing PAD cases, its association with LVAD, in-hospital mortality, and other complications of LVAD. The adjusted odds ratio (aOR) and 95% confidence interval (CI) were calculated using the Cochran-Mantel-Haenszel test. Results: A total of 20,817 LVAD patients, comprising of 1,625 (7.8%) PAD and 19,192 (91.2%) non-PAD patients were included in the study. The odds of in-hospital mortality in PAD patients were significantly higher compared to non-PAD group (OR 1.29, CI, 1.07-1.55, P = 0.007). The PAD group had significantly higher adjusted odds as compared to non-PAD group for acute myocardial infarction (aOR 1.29; 95% CI, 1.07-1.55, P = 0.007), major bleeding requiring transfusion (aOR, 1.286; 95% CI, 1.136-1.456, P < 0.001), vascular complications (aOR, 2.360; 95% CI, 1.781-3.126, P < 0.001), surgical wound infections (aOR, 1.50; 95% CI, 1.17-1.94, P = 0.002), thromboembolic complications (aOR, 1.69; 95% CI, 1.36-2.10, P < 0.001), implant-related complications (aOR, 1.47; 95% CI, 1.19-1.80, P < 0.001), and acute renal failure (aOR, 1.26; 95% CI, 1.12-1.43, P < 0.001). Conclusion: PAD patients can have high LVAD associated mortality as compared to non-PAD. (C) 2020 The Authors. Published by Elsevier B.V.

**Vakharia P, Xie M and Mazen Al-Hakim M** (2020). "Facial nerve palsy after temporal artery biopsy." [SKINmed](#) 18(1): 54-56.

[Full Text](#)

*Department of Neurology*

*OUWB Medical Student Author*

*Department of Pathology*

A 79-year-old woman presented to the emergency room with a chief complaint of headache of 1 month's duration. Her medical history consisted of hypertension, congestive heart failure, anemia, chronic kidney disease, and hyperlipidemia. She reported the headache as waxing and waning, and occurring bilaterally in the frontal and occipital regions. On examination, she was found to have mild right-sided ptosis and possible early right-sided papilledema. She was also found to have bilateral shoulder tenderness and scalp tenderness. She denied double vision, vision changes, or jaw claudication.

van Rosendael AR, Bax AM, Smit JM, van den Hoogen IJ, Ma X, Al'Aref S, Achenbach S, Al-Mallah MH, Andreini D, Berman DS, Budoff MJ, Cademartiri F, Callister TQ, Chang HJ, **Chinnaiyan K**, Chow BJW, Cury RC, DeLago A, Feuchtnr G, Hadamitzky M, Hausleiter J, Kaufmann PA, Kim YJ, Leipsic JA, Maffei E, Marques H, de Araujo Goncalves P, Pontone G, **Raff GL**, Rubinshtein R, Villines TC, Gransar H, Lu Y, Pena JM, Lin FY, Shaw LJ, Min JK and Bax JJ (2020). "Clinical risk factors and atherosclerotic plaque extent to define risk for major events in patients without obstructive coronary artery disease: The long-term coronary computed tomography angiography CONFIRM registry." [European Heart Journal of Cardiovascular Imaging](#) 21(5): 479-488.

[Full Text](#)

*Department of Internal Medicine*

Aims: In patients without obstructive coronary artery disease (CAD), we examined the prognostic value of risk factors and atherosclerotic extent. Methods and Results: Patients from the long-term CONFIRM registry without prior CAD and without obstructive ( $\geq 50\%$ ) stenosis were included. Within the groups of normal coronary computed tomography angiography (CCTA) (N = 1849) and non-obstructive CAD (N = 1698), the prognostic value of traditional clinical risk factors and atherosclerotic extent (segment involvement score, SIS) was assessed with Cox models. Major adverse cardiac events (MACE) were defined as all-cause mortality, non-fatal myocardial infarction, or late revascularization. In total, 3547 patients were included (age 57.9 +/- 12.1 years, 57.8% male), experiencing 460 MACE during 5.4 years of follow-up. Age, body mass index,

hypertension, and diabetes were the clinical variables associated with increased MACE risk, but the magnitude of risk was higher for CCTA defined atherosclerotic extent; adjusted hazard ratio (HR) for SIS >5 was 3.4 (95% confidence interval [CI] 2.3-4.9) while HR for diabetes and hypertension were 1.7 (95% CI 1.3-2.2) and 1.4 (95% CI 1.1-1.7), respectively. Exclusion of revascularization as endpoint did not modify the results. In normal CCTA, presence of  $\geq 1$  traditional risk factors did not worsen prognosis (log-rank  $P = 0.248$ ), while it did in non-obstructive CAD (log-rank  $P = 0.025$ ). Adjusted for SIS, hypertension and diabetes predicted MACE risk in non-obstructive CAD, while diabetes did not increase risk in absence of CAD ( $P$ -interaction = 0.004). Conclusion: Among patients without obstructive CAD, the extent of CAD provides more prognostic information for MACE than traditional cardiovascular risk factors. An interaction was observed between risk factors and CAD burden, suggesting synergistic effects of both.

Vinogradskiy Y, Diot Q, Jones B, Castillo R, Castillo E, Kwak J, Bowles D, **Grills I**, Myziuk N, **Guerrero T**, **Stevens C**, Schefter T, Gaspar LE, Kavanagh B, Miften M and Rusthoven C (2020). "Evaluating positron emission tomography-based functional imaging changes in the heart after chemo-radiation for patients with lung cancer." International Journal of Radiation Oncology Biology Physics 106(5): 1063-1070.

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*Department of Radiation Oncology*

Purpose: Studies have noted a link between radiation dose to the heart and overall survival (OS) for patients with lung cancer treated with chemoradiation. The purpose of this study was to characterize pre- to posttreatment cardiac metabolic changes using fluorodeoxyglucose/positron emission tomography (FDG-PET) images and to evaluate whether changes in cardiac metabolism predict for OS. Methods and Materials: Thirty-nine patients enrolled in a functional avoidance prospective study who had undergone pre- and postchemoradiation FDG-PET imaging were evaluated. For each patient, the pretreatment and posttreatment PET/CTs were rigidly registered to the planning CT, dose, and structure set. PET-based metabolic dose-response was assessed by comparing pretreatment to posttreatment mean standardized uptake values (SUVmean) in the heart as a function of dose-bin. OS analysis was performed by comparing SUVmean changes for patients who were alive or had died at last follow-up and by using a multivariate model to assess whether pre- to posttreatment SUVmean changes were a predictor of OS. Results: The dose-response curve revealed increasing changes in SUV as a function of cardiac dose with an average SUVmean increase of 1.7% per 10 Gy. Patients were followed for a median of 437 days (range, 201-1131 days). SUVmean change was significantly predictive of OS on multivariate analysis with a hazard ratio of 0.541 (95% confidence intervals, 0.312-0.937). Patients alive at follow-up had an average increase of 17.2% in cardiac SUVmean while patients that died had an average decrease in SUVmean decrease of 13.5% ( $P = .048$ ). Conclusions: Our data demonstrated that posttreatment SUV changes in the heart were significant indicators of dose-response and predictors of OS. The present work is hypothesis generating and must be validated in an independent cohort. If validated, our data show the potential for cardiac metabolic changes to be an early predictor for clinical outcomes.

Vishweswaraiah S, Mishra NK, Guda C, **Radhakrishna U** and **Bahado-Singh R** (2020). "Placental DNA methylation changes in detection of tetralogy of Fallot." Ultrasound in Obstetrics & Gynecology 55(6): 768-775.

[Full Text](#)

*Department of Obstetrics & Gynecology*

Objectives: To determine whether the methylation level of cytosine nucleotides in placental DNA can be used to predict tetralogy of Fallot (TOF) and provide insights into the developmental mechanism of this condition. Methods: Tissue sections were obtained from formalin-fixed paraffin-embedded specimens of placental tissue obtained at birth from eight cases with non-chromosomal, non-syndromic TOF and 10 unaffected newborns. The Illumina Infinium HumanMethylation450 BeadChip assay was used to measure cytosine ('CpG' or 'cg') methylation levels at loci throughout the placental genome. Differential methylation was assessed by comparing the  $\beta$ -values (a measure of the extent of cytosine methylation) for individual CpG loci in fetuses with TOF vs in controls. The most discriminating CpG sites were determined based on a preset cut-off of  $\geq 2.0$ -fold change in the methylation level. The predictive accuracy of CpG loci with significant methylation changes for TOF was determined by the area under the receiver-operating-characteristics curve (AUC). A false-discovery-rate (FDR)  $P$ -value  $< 0.05$  was used to define a statistically significant difference in the methylation level. Ingenuity Pathway Analysis (IPA) (Qiagen) was used to identify gene pathways that

were significantly overexpressed, and thus altered, in TOF cases compared with controls. Results: We found a total of 165 significantly differentially methylated CpG loci in TOF cases compared with controls, in 165 separate genes. These biomarkers demonstrated from fair to excellent individual predictive accuracy for TOF detection, with AUCs  $\geq 0.75$  (FDR P-value  $< 0.001$  for all). The following CpG loci (gene) had the highest predictive accuracy: cg05273049 (ARHGAP22; AUC = 1.00; 95% CI, 1.00-1.00), cg02540011 (CDK5; AUC = 0.96; 95% CI, 0.87-1.00), cg08404201 (TRIM27; AUC = 0.95; 95% CI, 0.84-1.00) and cg00687252 (IER3; AUC = 0.95; 95% CI, 0.84-1.00). IPA revealed over-representation (dysregulation) of 14 gene pathways involved in normal cardiac development, including cardiomyocyte differentiation via bone morphogenetic protein receptors, cardiac hypertrophy signaling and role of nuclear factor of activated T cells in cardiac hypertrophy. Cardiac hypertrophy is an important feature of TOF. Conclusions: Analysis of placental DNA cytosine methylation changes yielded accurate markers for TOF detection and provided mechanistic information on TOF development. Our work appears to confirm the central role of epigenetic changes and of the placenta in the development of TOF.

Vivacqua A, Robinson J, **Abbas AE**, Altshuler JM, **Shannon FL**, Podolsky RH and Sakwa MP (2020). "Single-dose cardioplegia protects myocardium as well as traditional repetitive dosing: A noninferiority randomized study." Journal of Thoracic and Cardiovascular Surgery 159(5): 1857.

[Request Form](#)

*Department of Internal Medicine*

*Department of Surgery*

Objective: The present prospective noninferiority randomized trial was designed to demonstrate the safety and efficacy of a single dose of Custodiol histidine-tryptophan-ketoglutarate compared with repetitive cold-blood cardioplegia. Methods: From October 2012 to May 2014, 110 patients were randomly assigned to 1 of 2 groups: Group 1 (55 patients) received repetitive cold-blood cardioplegia, and group 2 (55 patients) received single-dose Custodiol histidine-tryptophan-ketoglutarate. Isolated aortic valve replacement, isolated mitral valve replacement, and multivalve procedures represented the most frequent operations, with 39 cases (71%) in group 1 and 49 cases (89%) in group 2. There was no difference in cardiopulmonary bypass time (102 +/- 26 minutes vs 99 +/- 19 minutes, P = .70) or aortic crossclamp time (77 +/- 19 minutes vs 74 +/- 17 minutes, P = .33). All patients underwent preoperative electrocardiogram and determination of creatine kinase-MB, troponin I, left ventricular ejection fraction, and regional wall motion. Postoperative cardiac biomarkers were checked at 7, 24, and 48 hours, and an echocardiogram was obtained to check for left ventricular function abnormalities. Results: There was no difference in cardiac biomarkers release between the 2 groups at baseline and 7, 24, and 48 hours postoperatively (creatinine kinase, P = .18, troponin P = .23). Left ventricular function was similar between groups preoperatively and at 24 hours after surgery. No death or myocardial infarction was observed in either group. There were no differences in intensive care unit length of stay, incidence of atrial fibrillation, use of inotropes or vasopressors support, time of intubation, or creatinine levels. Conclusions: A single dose of Custodiol histidine-tryptophan-ketoglutarate cardioplegia is not inferior to repeated cold-blood cardioplegia during elective cardiac surgery.

Vollstedt A and **Gilleran J** (2020). "Update on implantable PTNS devices." Current Urology Reports 21(7): 28.

[Full Text](#)

*Department of Urology*

Purpose of Review: There is growing evidence supporting the use of percutaneous tibial nerve stimulation to manage lower urinary tract symptoms (LUTS) such as urgency, frequency and urge incontinence, in a non-pharmacologic, minimally invasive approach. Given this, there is now an impetus to move this technology forward from an interval (i.e., weekly and/or monthly) toward a continuous dosing, using implantable devices. This review article focuses on the newest implantable devices and the most current data demonstrating safety and efficacy in the management of refractory overactive bladder. Recent Findings: There are new studies showing that continuous (or even semi-continuous) stimulation of the tibial nerve can be of similar efficacy as other chronic neural implant devices, such as sacral neuromodulation. This includes the Blue Wind Renova, StimGuard, eCoin, and Bioness Stimrouter. While the data on these devices are still short-term, implantable tibial nerve stimulation holds promise in the field of managing LUTS and pelvic floor disorders. Durability and minimizing migration remain challenging.

Vollstedt A, **Rezaee ME**, Monga M, Zampini A, Krambeck AE, Shah O, Sur RL, Chew B, Eisner B and Pais V (2020). "The use of outpatient opioid medication for acute renal colic and ureteral stents: Insights from a multi-institutional patient survey." Clinical Nephrology 93(6): 269-274.

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*OUWB Medical Student Author*

**Aims:** To investigate the main reasons for use of opioids during acute episodes of renal colic and for ureteral stent symptoms post-operatively. **Material and methods:** A survey assessing the impact of decreased quality of life and use of opioid pain medication was distributed to patients with a history of ureteral stent at seven academic centers between July 2016 and June 2018. **Results:** A total of 365 surveys were completed. Opioid use for stone (63.9%) and stent-related pain (39.0%) was common among respondents. When assessing whether patients used more opioids for stone or stent-related pain, 47.7% reported using more for stone pain while 15.0% reported using more for stent pain. 22.6% of patients required opioids for stent-related pain and not stone pain. Increasing patient age was found to be negatively associated with using opioids for stent-related pain (OR: 0.4, 95% CI: 0.3 - 0.6). Increasing age was also found to be negatively associated with opioid use for stone pain (OR: 0.6, 95% CI: 0.4 - 0.8). Patients with a greater number of prior stones had 3.2 times the odds of using opioids for stone pain, in our adjusted model (95% CI: 2.1 - 4.7). **Conclusion:** Patients with more prior stone episodes are more likely to have used opioids for their most recent episode. Although ureteral stents have been shown to be associated with a decreased quality of life, we showed that the use of opioids for stent-related pain is less than that for stone pain. Younger patients are less likely to tolerate a stent without opioid analgesics.

Vu CC, Siddiqui ZA, Zamdborg L, Thompson AB, Quinn TJ, Castillo E and **Guerrero TM** (2020). "Deep convolutional neural networks for automatic segmentation of thoracic organs-at-risk in radiation oncology: Use of non-domain transfer learning." Journal of Applied Clinical Medical Physics 21(6): 108-113.

[Full Text](#)

*Department of Radiation Oncology*

**Purpose:** Segmentation of organs-at-risk (OARs) is an essential component of the radiation oncology workflow. Commonly segmented thoracic OARs include the heart, esophagus, spinal cord, and lungs. This study evaluated a convolutional neural network (CNN) for automatic segmentation of these OARs. **Methods:** The dataset was created retrospectively from consecutive radiotherapy plans containing all five OARs of interest, including 22,411 CT slices from 168 patients. Patients were divided into training, validation, and test datasets according to a 66%/17%/17% split. We trained a modified U-Net, applying transfer learning from a VGG16 image classification model trained on ImageNet. The Dice coefficient and 95% Hausdorff distance on the test set for each organ was compared to a commercial atlas-based segmentation model using the Wilcoxon signed-rank test. **Results:** On the test dataset, the median Dice coefficients for the CNN model vs. the multi-atlas model were 71% vs. 67% for the spinal cord, 96% vs. 94% for the right lung, 96% vs. 94% for the left lung, 91% vs. 85% for the heart, and 63% vs. 37% for the esophagus. The median 95% Hausdorff distances were 9.5 mm vs. 25.3 mm, 5.1 mm vs. 8.1 mm, 4.0 mm vs. 8.0 mm, 9.8 mm vs. 15.8 mm, and 9.2 mm vs. 20.0 mm for the respective organs. The results all favored the CNN model ( $P < 0.05$ ). **Conclusions:** A 2D CNN can achieve superior results to commercial atlas-based software for OAR segmentation utilizing non-domain transfer learning, which has potential utility for quality assurance and expediting patient care.

**Wasserman JA** (2020). "Humanism in health and healthcare (iCollaborative)." MedEdPortal Resource ID 5089.

[Full Text](#)

*Department of Foundational Medical Studies (OU)*

**Weiner AJ**, Weiner Y and Weiner A (2020). "Intraocular pressure after cataract surgery combined with ab-interno trabeculectomy versus trabecular micro-bypass stent: An intra-subject same-surgeon comparison." Journal of Glaucoma. ePub Ahead of Print.

[Full Text](#)

*OUWB Medical Student Author*

**PRECIS:** Combining Trabectome or iStent with phacoemulsification equally reduces IOP and IOP-lowering medication burden during a 24-month follow-up, with a possible advantage to the Trabectome in the early



postoperative period. Purpose: Intra-subject same-surgeon comparison between phacoemulsification combined with Trabectome (Phaco/Trabectome) versus one 1st-generation iStent (Phaco/iStent). Settings: Private glaucoma and cataract practice. Design: Retrospective interventional case series. Methods: Data collected at 3-4 and 20-24 hours and up to 30 months following Phaco/Trabectome in one eye and Phaco/iStent in the contralateral eye in patients with bilateral visually-significant cataract and open-angle glaucoma. Evaluations included intra-ocular pressure (IOP), IOP-lowering medications (IOPmeds), visual acuity and complications. Results: Forty five patients (90 eyes) were identified (age 76.5, 57-9550% shaded blocky). At 3-4 hours, IOP was above baseline in 12 and 13 eyes following Phaco/Trabectome and Phaco/iStent, respectively, but the degree of IOP elevation was smaller ( $P=0.048$ ) following Phaco/Trabectome: 4.350% shaded blockmmHg, 2.0-6.650% shaded blockmmHg (95% CI) versus Phaco/iStent: 8.750% shaded blockmmHg, 3.8-13.650% shaded blockmmHg. At 20-24 hours, compared to baseline, IOP was significantly lower after Phaco/Trabectome ( $P=0.004$ ) but not after Phaco/iStent ( $P=0.14$ ) although the rate of hyphema was higher following Phaco/Trabectome (12/45 vs. 2/45 eyes,  $P=0.007$ ). IOP reduction from baseline at 3-4 hours was significantly larger ( $P=0.020$ ) in the 21 eyes with hyphema: (-3.9), (-6.4)-(-1.4) versus the 69 eyes without hyphema: (-0.3), (-2.0)-(+1.4). At 1, 6, 12 and 24 months, IOP and number of IOPmeds were similar and significantly lower compared to baseline following either procedure. No complications were encountered in either group. Conclusion: Combined phacoemulsification with either Trabectome or 1st-generation iStent similarly lowers IOP and IOPmeds burden at 1, 6, 12 and 24 months following surgery. The Trabectome may have an advantage in lowering IOP faster and lessening the degree of IOP elevations in the early post-operative period.

**Wiegmann D** and Haddad L (2020). "Two is better than one: The combined effects of glycolic acid and salicylic acid on acne-related disorders." *Journal of Cosmetic Dermatology*. ePub Ahead of Print.

[Full Text](#)

*OUWB Medical Student Author*

Background: Many companies capitalized on treatable skin conditions by providing expensive prescription medications or high-end over-the-counter cosmetics. However, patients have become more apprehensive toward these medications in lieu of their often-detrimental side effect profile and reactivity with sensitive skin. Aims: We developed a serum was created to counteract this budding problem. Our goal was to bring an alternative prescription acne medication that was superior in controlling acne when compared to several OTC and prescription-strength medications. We created a new formulary comprising primarily of all natural glycolic acid and salicylic acid. Patients/Methods: We designed a prospective study to assess the efficacy of our serum composed of glycolic and salicylic acid for patients suffering from mild to moderate inflammatory and cystic acne, rosacea, folliculitis, and keratosis pilaris. Sixty-six patients were selected ranging in age from 17 to 46. They were asked to apply the wake-up serum at night for 2 weeks. At the follow-up appointment, the patients were asked to fill out a questionnaire regarding the changes they have noticed with their skin. Results: Over 90% of the patients reported they had significant overall improvement in acne with decrease in comedonal and cystic acne. 70%-80% of the patients stated decrease in oiliness, even texture, and smoother looking skin. Physical examination findings were consistent with patient-reported assessment. Conclusion: A glycolic and salicylic acid combination serum may be considered an alternative treatment method for patients who wish to opt out of the typical prescription medication treatment.

**Wilson GD**, Wilson TG, Hanna A, Fontanesi G, Kulchyski J, Buelow K, Pruetz BL, **Michael DB**, **Chinnaiyan P**, **Maddens ME**, Martinez AA and **Fontanesi J** (2020). "Low dose brain irradiation reduces amyloid- $\beta$  and Tau in 3xTg-AD mice." *Journal of Alzheimer's Disease* 75(1): 15-21.

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*Department of Neurosurgery*

*Department of Radiation Oncology*

*Department of Internal Medicine*

We have previously reported that low doses of external beam ionizing irradiation reduced amyloid- $\beta$  ( $A\beta$ ) plaques and improved cognition in APP/PS1 mice. In this study we investigated the effects of radiation in an age-matched series of 3xTg-AD mice. Mice were hemibrain-irradiated with 5 fractions of 2 Gy and sacrificed 8 weeks after the end of treatment.  $A\beta$  and tau were assessed using immunohistochemistry and quantified using image analysis with Definiens Tissue Studio. We observed a significant reduction in  $A\beta$  plaque burden

and tau staining; these two parameters were significantly correlated. This preliminary data is further support that low doses of radiation may be beneficial in Alzheimer's disease.

Wood EH, Korot E, Storey PP, Muscat S, **Williams GA** and **Drenser KA** (2020). "The retina revolution: Signaling pathway therapies, genetic therapies, mitochondrial therapies, artificial intelligence." Current Opinion in Ophthalmology 31(3): 207-214.

[Full Text](#)

*Department of Ophthalmology*

Purpose of Review: The aim of this article is to review and discuss the history, current state, and future implications of promising biomedical offerings in the field of retina. Recent Findings: The technologies discussed are some of the more recent promising biomedical developments within the field of retina. There is a US Food and Drug Administration-approved gene therapy product and artificial intelligence device for retina, with many other offerings in the pipeline. Summary: Signaling pathway therapies, genetic therapies, mitochondrial therapies, and artificial intelligence have shaped retina care as we know it and are poised to further impact the future of retina care. Retina specialists have the privilege and responsibility of shaping this future for the visual health of current and future generations.

Wu JC, Daley E, Koueiter DM, Lilly R, Vara AD and **Settecerri JJ** (2020). "Operating room intervention rates after orthopaedic resident-reduced pediatric both-bone forearm fractures relative to the academic calendar." Journal of Pediatric Orthopaedics 40(5): 228-234.

[Full Text](#)

*Department of Orthopaedic Surgery*

Background: The purpose of this study was to evaluate the operating room (OR) intervention rates and quality of fracture reductions for pediatric diaphyseal both-bone forearm fractures performed by orthopaedic residents relative to the academic year. OR intervention was defined as any procedure performed in the OR, including closed reduction and casting, and was used to identify fractures that required secondary intervention after initial closed reduction performed by an orthopaedic resident in the emergency department. Methods: A retrospective analysis identified pediatric patients presenting at our institution with both-bone forearm fractures from July 2010 to June 2016. Emergency-room sedation time, highest experience of orthopaedic resident documented to be present at the time of sedation (in postgraduate months), and frequencies of OR intervention were obtained by chart review. Fracture characteristics were determined by radiographic review. Immediate postreduction radiographs were used to measure cast indices, and adequacy of reduction was determined by postreduction angulation and translation. Results: During the time period studied, 470 both-bone forearm reductions under sedation were performed by an orthopaedic resident at our institution. Of these, 41 fractures (41 patients) required 42 OR interventions (40 involved surgical fixation and 2 were repeat closed reductions). The academic year was divided into quartiles. The April to June quartile had the highest overall percentage of OR intervention (10.6%), followed by July to September (8.6%); however, there was no significant difference between quartiles in the percentages of reductions that needed OR intervention ( $P=0.553$ ). There was also no correlation between the experience level of the resident performing the reduction (based on postgraduate months) and the frequency of OR intervention ( $P=0.244$ ). The anteroposterior (AP) and lateral reduction grades did not vary based on quarters ( $P=0.584$ ;  $0.353$ ). The ability to obtain adequate reduction and the rate of unacceptable cast index were also not significantly different between quarters ( $P=0.347$  and  $0.465$ ). Conclusions: We found no significant difference in rates of OR intervention or the quality of reduction for pediatric both-bone diaphyseal forearm fractures treated by orthopaedic residents relative to the academic year. Level of Evidence: Level III-comparative cohort study.

Yang J, Gurudu SR, Koptiuch C, Agrawal D, Buxbaum JL, Fehmi SMA, Fishman DS, Khashab MA, **Jamil LH**, Jue TL, Law JK, Lee JK, Naveed M, Qumseya BJ, Sawhney MS, Thosani N, Wani SB, Samadder NJ and Comm ASP (2020). "American Society for Gastrointestinal Endoscopy guideline on the role of endoscopy in familial adenomatous polyposis syndromes." Gastrointestinal Endoscopy 91(5): 963.

[Full Text](#)

*Department of Internal Medicine*

Familial adenomatous polyposis (FAP) syndrome is a complex entity, which includes FAP, attenuated FAP,

and MUTYH-associated polyposis. These patients are at significant risk for colorectal cancer and carry additional risks for extracolonic malignancies. In this guideline, we reviewed the most recent literature to formulate recommendations on the role of endoscopy in this patient population. Relevant clinical questions were how to identify high-risk individuals warranting genetic testing, when to start screening examinations, what are appropriate surveillance intervals, how to identify endoscopically high-risk features, and what is the role of chemoprevention. A systematic literature search from 2005 to 2018 was performed, in addition to the inclusion of seminal historical studies. Most studies were from worldwide registries, which have compiled years of data regarding the natural history and cancer risks in this cohort. Given that most studies were retrospective, recommendations were based on epidemiologic data and expert opinion. Management of colorectal polyps in FAP has not changed much in recent years, as colectomy in FAP is the standard of care. What is new, however, is the developing body of literature on the role of endoscopy in managing upper GI and small-bowel polyposis, as patients are living longer and improved endoscopic technologies have emerged.

Yassin AS, Subahi A, Adegbala O, Abubakar H, Dawdy J, Mishra T, Akintoye E, Shereef H, **Ghandour M**, Alhusain R, Shokr M, Oviedo C and Afonso L (2020). "Clinical Impact of atrial fibrillation on short-term outcomes and in-hospital mortality in patients with Takotsubo Syndrome: A propensity-matched national study." Cardiovascular Revascularization Medicine 21(4): 522-526.

[Full Text](#)

*OUWB Medical Student Author*

Introduction: Takotsubo Syndrome (TS) patients are at high risk of developing atrial fibrillation. We sought to investigate the outcomes and economic impact of atrial fibrillation on TS patients utilizing the National Inpatient Sample. Methods: Patients with TS were identified in the National Inpatient Sample (NIS) database between 2010 and 2014 using the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM), and subsequently were divided into two groups, those with and without atrial fibrillation. The primary outcome was all-cause in-hospital mortality in the two groups. Secondary outcomes were in-hospital complications. We also evaluated the length of hospital stay and the cost of hospitalization. Propensity score-matched analysis was performed to address potential confounding factors. Results: Among the study population, the prevalence of atrial fibrillation was 17.57%. After matching, the atrial fibrillation group had no significant increase of in-hospital mortality (OR: 1.13; 95% CI: 0.94-1.35, p=0.211). However, atrial fibrillation patients were more likely to develop cardiac arrest and ventricular arrhythmias (OR: 1.51, 95% CI: 1.26-1.80, p<0.0001), have higher rate of major cardiac complications when combined as a single endpoint in-hospital complication (OR: 1.16, 95% CI: 1.04-1.29, p: 0.006), also they were more likely to stay longer in hospital (OR: 1.13, 95% CI: 1.08-1.19, p<0.0001), and have increased cost of hospitalization (OR: 1.13, 95% CI 1.07-1.20, p<0.0001). Conclusion: Atrial fibrillation does not increase in-hospital mortality in patients presenting with TS. However atrial fibrillation is associated with an increased risk of ventricular arrhythmias, length of stay, non-routine discharges and cost of hospitalization.

**Yuhan BT, Trang A**, Hutz MJ and Leonetti JP (2020). "Primary paraganglioma of the facial canal: An evidence-based approach." Otolaryngology-Head & Neck Surgery 162(4): 458-468.

[Full Text](#)

*OUWB Medical Student Author*

Objectives: To perform an evidence-based review evaluating presenting symptoms, imaging, and management for primary paragangliomas of the facial canal (PPFCs). Data Sources: PubMed/MEDLINE, Embase, Cochrane Library, and Web of Science. Review Methods: Studies were assessed for quality of evidence and bias with the Cochrane bias tool, GRADE, and MINORS criteria. Demographic data, imaging modalities, management strategies, and status at last follow-up were obtained. Results: Sixteen studies met inclusion criteria. In total, 21 patients with PPFCs were identified, 19 of which were histologically confirmed. Most common presenting symptoms included unilateral facial nerve dysfunction (n = 14, 73.7%) and pulsatile tinnitus (n = 8, 42.1%). Mean time from reported onset of facial dysfunction was 17.8 months. Computed tomography findings included an expanded descending facial nerve canal (n = 13, 76.5%). All cases with magnetic resonance imaging reported enhancement with contrast. Of the 18 patients who had surgery, 16 (88.9%) underwent full tumor resection while 1 (5.6%) had partial tumor debulking with adjuvant radiotherapy. Overall improvement in facial weakness was documented in 5 of 9 patients (55.6%) with initial

facial nerve dysfunction and >6-month follow-up. No evidence of tumor recurrence was reported. Conclusions: PFFCs are extraordinarily rare vascular neoplasms of the temporal bone. Early imaging with both computed tomography and magnetic resonance imaging is essential for narrowing the differential diagnosis, assessing the extent of tumor invasion, and accurate surgical planning. Surgical tumor resection with subsequent facial nerve reconstruction is recommended for patients with facial nerve dysfunction, while tumor biopsy or debulking may be indicated when normal facial movement is present.

**Zakaria A**, Gill J, Nishi LM, Nadwodny J and Pujalte GGA (2020). "Soccer player with unusual right shoulder and arm pain and swelling." Journal of Primary Health Care 12(2): 181-183.

[Full Text](#)

*Department of Internal Medicine*

Introduction: Paget-Schroetter syndrome, or effort thrombosis, refers to a deep venous thrombosis in an upper extremity. It is most commonly located in the axillary or subclavian veins and is associated with vigorous repetitive movements and anatomic abnormalities. Case Presentation: This case study describes an 18-year-old Division 1 soccer player who presented with worsening axillary swelling and pain. He was found to have subclavian stenosis at the level of the thoracic inlet between the clavicle and first rib, with deep venous thrombosis in his right axillary, subclavian, proximal brachial, and basilic veins. It was diagnosed with ultrasound and confirmed with venography. He was treated initially with enoxaparin and warfarin before having mechanical thrombolysis, balloon venoplasty, infusion of tissue plasminogen activator, and a right first rib resection. Conclusion: As Paget-Schroetter syndrome is rare, early recognition and management leads to fewer long-lasting sequelae and less morbidity. Left untreated, it can result in pulmonary embolism and residual upper extremity obstruction.