

OAKLAND UNIVERSITY WILLIAM BEAUMONT SCHOOL OF MEDICINE
PUBLICATION LIST
July - September 2022

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, and we will add it to the next quarter's list. Click the "Full-Text" link to download the articles available through the OUWB Medical Library. If the full-text is not available, you may request a copy by clicking the "Request Form" link or calling us at 248-370-3772. If you have any questions or comments, please contact David Stewart at davidstewart@oakland.edu.

Abdelrahman AA, Powell FL, Jadeja RN, Jones MA, Thounaojam MC, Bartoli M, **Al-Shabrawey M** and Martin PM (2022). "Expression and activation of the ketone body receptor hcar2/gpr109a promotes preservation of retinal endothelial cell barrier function." *Experimental Eye Research* 221: 109129.

[Full Text](#)

Department of Foundational Medical Studies (OU)

Preservation of retinal barrier function is critical to maintenance of retinal health. Therefore, it is not surprising that loss of barrier integrity is a pathologic feature common to degenerative retinal diseases such as diabetic retinopathy. Our prior studies demonstrate the importance of hydroxycarboxylic acid receptor 2/GPR109A (HCAR2/GPR109A) expression in the retinal pigment epithelium (RPE) to outer retinal barrier integrity. However, whether HCAR2/GPR109A is expressed in retinal endothelial cells and has a similar relationship to inner blood retinal barrier regulation is not known. In the current study, we examined relevance of receptor expression to endothelial cell dependent-blood retinal barrier integrity. siRNA technology was used to modulate HCAR2/GPR109A expression in human retinal endothelial cells (HRECs). Cells were cultured in the presence or absence of VEGF, a pro-inflammatory stimulus, and/or various concentrations of the HCAR2/GPR109A-specific agonist beta-hydroxybutyrate (BHB). HCAR2/GPR109A expression was monitored by qPCR and electrical cell impedance sensing (ECIS) was used to evaluate barrier function. Complementary in vivo studies were conducted in wildtype and HCAR2/GPR109A knockout mice treated intraperitoneally with lipopolysaccharide and/or BHB. Vascular leakage was monitored using fluorescein angiography and Western blot analyses of albumin extravasation. Additionally, retinal function was evaluated by OptoMotry. Decreased (siRNA knockdown) or absent (gene knockout) HCAR2/GPR109A expression was associated with impaired barrier function both in vitro and in vivo. BHB treatment provided some protection, limiting disruptions in retinal barrier integrity and function; an effect that was found to be receptor (HCAR2/GPR109A)-dependent. Collectively, the present studies support a key role for HCAR2/GPR109A in regulating blood-retinal barrier integrity and highlight the therapeutic potential of the receptor toward preventing and treating retinal diseases such as diabetic retinopathy in which compromised barrier function is paramount.

Abukhaled J and **Balinski AM** (2022). "Benign pheochromocytoma presenting with recurrent spells and negative biochemical screening." BMJ Case Reports 15(8): 1-4.

[Full Text](#)

OUWB Medical Student Author

A woman in her 40s presented with spells of hypertension, warmth, flushing and bradycardia for more than 1 year. Despite normal plasma metanephrines of 0.48 nmol/L (reference range: <0.50 nmol/L) and normal 24-hour urine metanephrines of 199 µg/day (reference range: 52–341 µg/day), an abdominal CT scan was obtained which revealed a 1.7 × 1.4 cm right adrenal gland nodule. During her next spell, 24-hour urine metanephrines were elevated at 585 µg/day with total metanephrines of 1026 µg/day (reference range: 140–785 µg/day). Subsequent MRI demonstrated a 1.5 × 1.5 cm right adrenal gland lesion concerning for pheochromocytoma. Right adrenal gland excision was performed and pathology confirmed a benign pheochromocytoma. Follow-up genetic testing was negative. This case highlights the challenges of identifying pheochromocytomas in the clinical setting. Early imaging may assist in the timely diagnosis and treatment of these tumours in patients presenting with recurrent spells and negative biochemical screening.

Abushukur Y, Ibrahim Y, Cascardo C, Keeley J and Knackstedt T (2022). "Basal cell carcinoma with perineural invasion: A systematic review and pooled survival analysis." Dermatologic Surgery. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

Background: Perineural invasion (PNI) is considered a high-risk histopathologic feature in many skin cancers. Perineural invasion is a well-known poor prognostic factor of squamous cell carcinoma, but is poorly understood in the context of basal cell carcinoma (BCC). Objective: To analyze available demographic, clinical, and treatment data for BCC with PNI and the effect of these variables on recurrence patterns, disease progression, and cancer-specific mortality (CSM). Methods: A systematic review and pooled-survival analysis was performed using case reports and series of patients with perineural BCC. Results: This review included 159 patients from 49 publications. Of these cases, 57 patients reported at least one recurrence. Where reported, median follow-up time was 31 months for patients without recurrence (n = 79) and 21 months for patients with recurrence (n = 32). The cumulative incidence of CSM at 5 years was 8.5% (95% confidence interval [CI] 0.028-0.186) and the overall five-year survival was 90.9% (95% CI 0.796-0.961). Conclusion: Male gender, multifocal nerve involvement, presence of clinical symptoms, and PNI detected on imaging are associated with poor prognosis of BCC with PNI. The high rate of disease recurrence and suboptimal cumulative incidence of CSM highlights the importance of early clinical detection, before the onset of symptomatic PNI and multifocal nerve involvement.

Abushukur Y, Mansour M, Cascardo C, Keeley J and Knackstedt T (2022). "The evolution of leadership: Analyzing the presidents of American Dermatology Societies overtime." Archives of Dermatological Research. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

Within organized dermatology, it is imperative that leaders embody a diverse group of individuals, reflective of the dermatologists they represent and the greater U.S. population. Despite women constituting more than half of the dermatologic workforce, they represent a

leadership minority in dermatology society higher level positions. This gap is evident by fewer women holding presidency positions within prominent dermatological societies; however, a comprehensive comparison across multiple societies has yet to be made. Our study analyzes and compares demographic as well as academic metrics of presidents from 16 prominent dermatology societies spanning 22 years, 2000-2021. Data were collected using organization websites, which demonstrated 247 unique presidents over 22 years. Of these presidents, 175 (70.9%) were male and 72 (29.1%) were female. Surgically focused societies had 63 (87.5%) male presidents and nine (12.5%) female presidents, while clinically focused societies had 112 (64.0%) male presidents and 63 (36.0%) female presidents ($P < 0.0002$). The publication h-index, academic rank, chairmanship, and number of advanced degrees, and total number of years in practice prior to election did not significantly differ between male and female leaders. There was no statistically significant difference in the proportion of female presidents across all societies between 2000 and 2021 by Cochran Armitage Trend Test. However, between 2016 and 2021, 35% of presidents were female and a general trend toward more gender balance may be noticed. This equality goal should continue to be emphasized in organized medicine.

Adadi P, Mensah EO and **Abdul-Razak S** (2022). "The outbreak of monkeypox (MPX) in Ghana." Journal of Medical Virology. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

Ajibade DA, Mourad W, Medina G and **Wiater JM** (2022). "Simultaneous bilateral shoulder arthroplasty: A case series." Journal of Shoulder and Elbow Surgery 31(8): e399-e404.

[Full Text](#)

Department of Orthopaedic Surgery

Background: Staged bilateral shoulder arthroplasty procedures have been shown to have good functional outcomes. The next step is to explore the option of simultaneous bilateral shoulder arthroplasty (SBSA). We report on the first case series of SBSA in the United States. The purpose of this study was to examine the safety and postoperative complication profile of SBSA and provide a technique reference for surgeons considering performing or investigating this procedure. Methods: We conducted a retrospective record review of all the SBSA procedures performed by the senior author between 2007 and 2020. Patient demographic characteristics, surgical information, and postoperative data were collected. Data were compiled, and means, standard deviations, and ranges were calculated. Any readmissions or postoperative complications requiring revision were noted. A cohort of patients matched for age, sex, and body mass index with staged (sequential) bilateral total shoulder arthroplasty was analyzed for comparison. Results: Thirteen patients were identified in the simultaneous group (SBSA). The mean age was 64 ± 15 years, with 9 women (69%) and 4 men (31%); the mean body mass index was 29.1 ± 7.5 . The mean American Society of Anesthesiologists score was 2.55 ± 0.7 , average blood loss was 364 ± 170 mL (range, 50-600 mL), 5 of 13 patients (38%) underwent blood transfusions, and the mean surgical time was 183 ± 42 minutes. Postoperatively, the mean visual analog scale pain score on postoperative day 1 was 4 ± 2 (range, 0-7), and the mean length of stay was 3.3 days. Postoperative complications included urinary tract infections in 2 patients, urinary retention in 2 patients, and recurrence of paroxysmal atrial fibrillation in 1 patient. No patient was readmitted within 90 days of surgery. One patient underwent a reoperation 2 years postoperatively for symptomatic hardware removal (cerclage cables around the tuberosities). A matched cohort of staged bilateral total shoulder arthroplasty patients was analyzed for comparison. Postoperative complications in the staged group included 1 reverse total shoulder

arthroplasty patient with subjective instability that was managed with additional physical therapy. There were no documented readmissions within 90 days or revision arthroplasty procedures in either cohort. Conclusions: SBSA is a reasonable procedure that can be useful in select patients, with promising short-term safety noted in this series. Prospective randomized studies are needed to assess the long-term safety and efficacy of the procedure.

Al-Obaide M, Ishmakej A, Brown C, Mazzella M, Agosta P, **Perez-Cruet M** and Chaudhry GR (2022). "The potential role of integrin alpha 6 in human mesenchymal stem cells." *Frontiers in Genetics* 13: 968228.

[Full Text](#)

Department of Neurosurgery

Human mesenchymal stem cells (MSCs) are isolated from various adult and perinatal tissues. Although mesenchymal stem cells from multiple sources exhibit similar morphology and cell surface markers, they differ in their properties. In this study, we determined that the expression of integrin alpha 6 (ITGA6) and ITGA6 antisense RNA (ITGA6-AS1) correlates with the proliferation, cell size, and differentiation potential. The expression of ITGA6 was inversely correlated with ITGA6-AS1 in MSCs. The expression of ITGA6 was higher, but ITGA6-AS1 was lower in MSCs from cord placenta junction, cord tissue, and Wharton's jelly. In contrast, ITGA6 expression was lower, while ITGA6-AS1 was higher in MSCs from the placenta. The bioinformatic analysis showed that ITGA6 genomic DNA transcribes ITGA6-AS1 from the reverse strand, overlapping ITGA6 exon-2. Additionally, we identify several putative promoters (P1-P10) of ITGA6. ITGA6-P10 is CG rich and contains CGI. EMBOSS Cpgplot software revealed a CGI length of 180 bp that extends from nucleotide 125 to 304 of the P10 sequence. We suggest that the post-transcriptional regulation of the ITGA6 in mesenchymal stem cells is controlled by the ITGA6-AS1, which could be a critical factor responsible for the heterogeneity in function and cell fate of human MSCs. These results may provide further impetus for investigations to unravel the mechanisms of ITGA6 regulation that could help maintain or improve the properties of mesenchymal stem cells.

Alam R, Wu WJ, **Alam A**, Matlaga BR and Winoker JS (2022). "Association between temperature and inpatient stone admission in a pediatric population." *Journal of Endourology* 36(9): 1243-1248.

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OUWB Medical Student Author

Background: Higher temperatures have been associated with increased stone formation and subsequent utilization of hospital resources, including inpatient admission. However, these observations have been derived from the adult population. We sought to examine if this purported association extends to the pediatric population. Methods: We used the 2016 Kids' Inpatient Database to identify nationwide pediatric inpatient admissions related to nephrolithiasis. Temperature data from the National Oceanic and Atmospheric Administration was linked to each admission. Comparative statistics analyzed patient and admission characteristics. Multivariable logistic regression analyzed associations between stone-related admissions and temperature. As a frame of reference, this analysis was replicated using the National Inpatient Sample from 2016 to evaluate associations in the adult population. Results: Of the 2,496,257 pediatric admissions, 8453 (0.33%) were related to nephrolithiasis. Temperatures at the time of stone admission were higher than those during nonstone admission (55.9°F vs 54.8°F, $p < 0.001$). The stone admission group had a higher proportion of females than the nonstone admission group (64.8% vs 55.4%, $p < 0.001$). Stone admission was significantly associated with temperature (odds ratio [OR] 1.025 per 10°F, confidence interval [95% CI] 1.003-1.049, $p = 0.03$) and female gender (OR 1.097, 95% CI 1.027-1.171, $p = 0.006$). In

the adult population, 380,520 out of 30,000,941 patients (1.3%) were admitted with a stone. The effect of temperature on stone admissions was similar to that in the pediatric population (OR 1.020, 95% CI 1.014-1.026, $p < 0.001$), but women were >20% less likely to be admitted for stones than men (OR 0.770, 95% CI 0.757-0.784, $p < 0.001$). Conclusions: Increased temperatures were associated with an increased risk of stone-related admission in both the pediatric and adult populations. Females were at increased risk for stone-related admissions during childhood, but this trend reverses in adulthood.

Alghoul H, Farajat FA, Alser O, **Snyr AR**, Harmon CM and **Novotny NM** (2022). "Intraoperative uses of near-infrared fluorescence spectroscopy in pediatric surgery: A systematic review." Journal of Pediatric Surgery 57(6): 1137-1144.

[Full Text](#)

Department of Foundational Medical Studies (BH)

Department of Surgery

Alhousseini A, Romero R, Benshalom-Tirosh N, Gudicha D, Pacora P, Tirosh D, Kabiri D, Yeo L, Thachil J, Hsu CD, Hassan SS and Erez O (2022). "Nonovert disseminated intravascular coagulation (DIC) in pregnancy: A new scoring system for the identification of patients at risk for obstetrical hemorrhage requiring blood product transfusion." Journal of Maternal-Fetal and Neonatal Medicine 35(2): 242-257.

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Department of Obstetrics & Gynecology

Background: Nonovert disseminated intravascular coagulation (DIC) is a subclinical hemostatic dysfunction that has not yet reached the decompensation stage. The detection of pregnant patients at this stage may assist in the identification of those who will develop severe obstetrical hemorrhage, as it is one of the leading causes for preventable maternal mortality. Currently, nonovert DIC is diagnosed by a scoring system based on nonpregnant patients, originally generated by the International Society on Thrombosis and Hemostasis (ISTH), which does not address the physiologic changes of the hemostatic system during pregnancy. Objectives: (1) To develop a pregnancy-specific nonovert DIC score, (2) to determine the diagnostic performance of this score in detecting women at risk for obstetrical hemorrhage requiring blood product transfusion, and (3) to compare it to the existing ISTH nonovert DIC score. Study Design: This retrospective study has longitudinal and cross-sectional components and includes three steps: (1) characterization of the longitudinal changes in the components of modified ISTH nonovert DIC scores, including these parameters—fibrinogen, antithrombin III, protein C, prothrombin time (PT), platelets, thrombin-antithrombin (TAT) complex, and D-dimer—during gestation in a group of normal pregnancies ($n = 50$); (2) development of a pregnancy-specific nonovert DIC score in a cross-sectional design of high-risk ($n = 152$) and control ($n = 50$) pregnancies, based on the predictive performance of each analyte for the detection of women at risk for obstetrical hemorrhage requiring blood product transfusion and a logistic regression model; and (3) comparison between the diagnostic performance of the pregnancy-specific nonovert DIC score and the modified ISTH nonovert DIC score to detect, upon admission, women who are at increased risk for subsequent development of obstetrical hemorrhage requiring blood product transfusion. Results: (1) The study cohort included 202 patients, of which 21 (10%) had obstetrical hemorrhage that required blood product transfusion and were considered to have nonovert DIC; (2) using the nonpregnant ISTH nonovert DIC score, 92% of the patients had a D-dimer concentration above the 0.5 mg/L threshold, and only 2% were identified to have a low fibrinogen concentration (<100 mg/dL); thus, this scoring system was unable to identify any of the patients with nonovert DIC based on the suggested cutoff of a score of ≥ 5 ; (3) the

parameters included in the pregnancy-specific nonovert DIC score were selected based on their contribution to the performance of the model for the prediction of women at risk for obstetrical hemorrhage requiring blood product transfusion; as a result, we excluded the PT difference parameter from the score and the TAT complex concentration was added; and (4) a pregnancy-specific nonovert DIC score of ≥ 3 had a sensitivity of 71.4% and a specificity of 77.9% to identify patients at risk for obstetrical hemorrhage requiring blood product transfusion. Conclusion: We propose (1) a pregnancy-specific nonovert DIC score adjusted for the physiologic changes in the hemostatic system during gestation; and (2) that the pregnancy-specific nonovert DIC score can be a useful tool for the identification of patients at risk for obstetrical hemorrhage requiring blood product transfusion.

Allen O, Gallagher L and **Bloomingdale R** (2022). "Pre and post-operative CT imaging of adult alcapa: Reverse left ventricular remodeling and regression of intracoronary collateral network." Journal of Cardiovascular Computed Tomography 16(4): e31-e34.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Antonios B, Zimmer M, Herrman E and **Berghea R** (2022). "Severe thrombocytopenia two weeks following immunization with the Janssen Ad26.Cov2.S vaccine." Case Reports in Hematology 2022: 7208401.

[Full Text](#)

Department of Internal Medicine/Hospitalist Medicine

Immune thrombocytopenia (ITP) has been associated with immunizations with various proposed mechanisms, including overactivation of the immune system and production of antibodies against circulating platelets. ITP has also been associated with several viral infections, including HCV, HIV, and most recently, active SARS-CoV-2 infection. Here, we present a case of a 52-year-old male with no past medical history who sought evaluation with his primary care physician for upper and lower extremity ecchymosis of one week duration. Outpatient laboratory studies were notable for severe isolated thrombocytopenia with platelet count of $8 \times 10^9/L$. Interestingly, he received the Johnson and Johnson COVID-19 vaccine 16 days prior to his presentation. Clinical work up and laboratory investigations led to the diagnosis of ITP.

Aoun M, Dekhou A, Jahshan A and **Chinnaiyan K** (2022). "Gender, racial, and ethnic representation of cardiology fellows in the United States, 2014-2020: An underwhelming pace of diversification worsened by the COVID-19 pandemic." Journal of the National Medical Association 114(4): 451-455.

[Full Text](#)

OUWB Medical Student Author

Department of Internal Medicine/Cardiovascular Disease

Introduction: Cardiologists serve a diverse population of patients, yet the lack of diversity within the cardiology workforce has continued to persist and does not represent the composition of the patient population in the United States. Although medical schools and internal medicine residency programs have witnessed major improvements in diversity, the field of cardiology has not emulated these patterns. Methods: Gender, race, and ethnicity data from the graduate medical education supplements published annually in the Journal of the American Medical Association from 2014 through 2020 were analyzed. The effect of the COVID-19 pandemic on the recruitment of female trainees in cardiology was also investigated. Results and Discussion: Women represented 24.6% of cardiology trainees in the year 2020, which is a minor increase from 21.2% in 2014. The percentage of Hispanic trainees has slightly decreased from 6.90% in

2014 to 6.26% in 2020, while the percentage of Black trainees has only increased from 5.45% in 2014 to 5.50% in 2020. The data demonstrate a clear disparity and a desperate need for diversification of the cardiology trainee workforce. The COVID-19 pandemic may also exacerbate this lack of diversity in upcoming years due to the reemergence of inequities in social responsibilities between male and female trainees. Implications: Strong action must be taken on an institutional level to shift the culture in cardiology to one that is more appealing to women and underrepresented minorities in order to better serve an increasingly diverse population.

Arshad SA, Garcia EI, Bell C, Avritscher EBC, Kumar M, **Brahmamdham P**, Fraser JA, St Peter SD, Aranda A, Hill M, Marquart J, Van Arendonk K, Plumlee L, Streck CJ, Zamora IJ, Ghani MOA, Reichard KW, Sacks K, Kallis M, Hong A, Richards H, Lin S, Gross ER, Kabeer MH, Reyna T, Paton EA, Camp LB, Stephenson K, Dassinger M, Vali K, Filipescu R, DeUgarte DA, Krishna V, Slater B, Islam S, Thompson G, Moore JT, Englum BR, Scholz S, Sharbaugh E, Gander JW and Tsao K (2022). "Multicenter assessment of cryoanalgesia use in minimally invasive repair of pectus excavatum: A 20-center retrospective cohort study." Annals of Surgery. ePub Ahead of Print.

[Full Text](#)

Department of Pediatrics

Objective: To assess the clinical implications of cryoanalgesia for pain management in children undergoing minimally invasive repair of pectus excavatum (MIRPE). **Background:** MIRPE entails significant pain management challenges, often requiring high postoperative opioid use. Cryoanalgesia, which blocks pain signals by temporarily ablating intercostal nerves, has been recently utilized as an analgesic adjunct. We hypothesized that the use of cryoanalgesia during MIRPE would decrease postoperative opioid use and length of stay (LOS). **Materials and Methods:** A multicenter retrospective cohort study of 20 US children's hospitals was conducted of children (age below 18 years) undergoing MIRPE from January 1, 2014, to August 1, 2019. Differences in total postoperative, inpatient, oral morphine equivalents per kilogram, and 30-day LOS between patients who received cryoanalgesia versus those who did not were assessed using bivariate and multivariable analysis. P value <0.05 is considered significant. **Results:** Of 898 patients, 136 (15%) received cryoanalgesia. Groups were similar by age, sex, body mass index, comorbidities, and Haller index. Receipt of cryoanalgesia was associated with lower oral morphine equivalents per kilogram (risk ratio=0.43, 95% confidence interval: 0.33-0.57) and a shorter LOS (risk ratio=0.66, 95% confidence interval: 0.50-0.87). Complications were similar between groups (29.8% vs 22.1, P=0.07), including a similar rate of emergency department visit, readmission, and/or reoperation. **Conclusions:** Use of cryoanalgesia during MIRPE appears to be effective in lowering postoperative opioid requirements and LOS without increasing complication rates. With the exception of preoperative gabapentin, other adjuncts appear to increase and/or be ineffective at reducing opioid utilization. Cryoanalgesia should be considered for patients undergoing this surgery.

Attardi SM, Gould DJ, Pratt RL and Roach VA (2022). "YouTube-based course orientation videos delivered prior to matriculation fail to alleviate medical student anxiety about anatomy." Anatomical Sciences Education 15(4): 685-697.

[Full Text](#)

Department of Foundational Medical Studies (OU)

Badash I, **Raskin J**, Pei M, Soldatova L and Rassekh C (2022). "Contemporary review of submandibular gland sialolithiasis and surgical management options." Cureus 14(8): e28147.

[Full Text](#)

OUWB Medical Student Author

One of the most common disorders of the salivary glands is obstructive sialolithiasis. Salivary gland obstruction is important to address, as it can significantly impact patient quality of life and can progress to extensive cellulitis and abscess formation if left untreated. For small and accessible stones, conservative therapies often produce satisfactory outcomes. Operative management should be considered when stones are inaccessible or larger in size, and options include sialendoscopy, laser lithotripsy, extracorporeal shockwave lithotripsy, transoral surgery, and submandibular gland adenectomy. Robotic approaches are also becoming increasingly used for submandibular stone management. The purpose of this review is to summarize the modern-day management of submandibular gland obstructive sialolithiasis with an emphasis on operative treatment modalities. A total of 77 articles were reviewed from PubMed and Embase databases, specifically looking at the pathophysiology, clinical presentation, diagnosis, and management of submandibular sialolithiasis.

Bahado-Singh R, Friedman P, Talbot C, Aydas B, Southeikal S, Mishra NK, Guda C, Yilmaz A, Radhakrishna U and Vishweswaraiah S (2022). "Cell-free DNA in maternal blood and artificial intelligence: Accurate prenatal detection of fetal congenital heart defects." *American Journal of Obstetrics and Gynecology*. ePub Ahead of Print.

[Full Text](#)

Department of Obstetrics & Gynecology

Background: DNA cytosine nucleotide methylation (epigenomics and epigenetics) is an important mechanism for controlling gene expression in cardiac development. Combined artificial intelligence and whole-genome epigenomic analysis of circulating cell-free DNA in maternal blood has the potential for the detection of fetal congenital heart defects. Objective: This study aimed to use genome-wide DNA cytosine methylation and artificial intelligence analyses of circulating cell-free DNA for the minimally invasive detection of fetal congenital heart defects. Study Design: In this prospective study, whole-genome cytosine nucleotide methylation analysis was performed on circulating cell-free DNA using the Illumina Infinium MethylationEPIC BeadChip array. Multiple artificial intelligence approaches were evaluated for the detection of congenital hearts. The Ingenuity Pathway Analysis program was used to identify gene pathways that were epigenetically altered and important in congenital heart defect pathogenesis to further elucidate the pathogenesis of isolated congenital heart defects. Results: There were 12 cases of isolated nonsyndromic congenital heart defects and 26 matched controls. A total of 5918 cytosine nucleotides involving 4976 genes had significantly altered methylation, that is, a P value of $<.05$ along with $\geq 5\%$ whole-genome cytosine nucleotide methylation difference, in congenital heart defect cases vs controls. Artificial intelligence analysis of the methylation data achieved excellent congenital heart defect predictive accuracy (areas under the receiver operating characteristic curve, ≥ 0.92). For example, an artificial intelligence model using a combination of 5 whole-genome cytosine nucleotide markers achieved an area under the receiver operating characteristic curve of 0.97 (95% confidence interval, 0.87–1.0) with 98% sensitivity and 94% specificity. We found epigenetic changes in genes and gene pathways involved in the following important cardiac developmental processes: "cardiovascular system development and function," "cardiac hypertrophy," "congenital heart anomaly," and "cardiovascular disease." This lends biologic plausibility to our findings. Conclusion: This study reported the feasibility of minimally invasive detection of fetal congenital heart defect using artificial intelligence and DNA methylation analysis of circulating cell-free DNA for the prediction of fetal congenital heart defect. Furthermore, the findings supported an important role of epigenetic changes in congenital heart defect development.

Bahl A, Millard M, Hijazi M and Chen NW (2022). "Predictors of ultrasound-guided peripheral intravenous catheter failure: A secondary analysis of existing trial data." Journal of Vascular Access. ePub Ahead of Print.

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Department of Emergency Medicine

OUWB Medical Student Author

Objectives: Ultrasound-guided (US) peripheral intravenous catheters (PIVC) have a high failure rate with many failing prior to completion of therapy. Risk factors associated with catheter failure are poorly delineated. This study aimed to assess risk factors related to catheter failure including patient, procedure, catheter, and vein characteristics to further elucidate which variables may impact catheter longevity. Methods: This was a secondary analysis using an existing trial dataset that primarily compared survival of two catheters: a standard long (SL) and an ultra-long (UL) US PIVC. Adult emergency room patients with difficult intravenous access at a tertiary care suburban academic center were study participants. Kaplan-Meier was employed to estimate the median catheter survival time. Cox regression univariable and multivariable analyses were used to evaluate the primary outcome of catheter survival. Results: Among 257 subjects, 63% of PIVCs survived until completion of therapy. In a multivariable Cox regression model, length of catheter in vein >2.75 cm (adjusted hazard ratio [aHR] 0.58, 95% confidence interval [CI] 0.37–0.90, $p = 0.01$) was associated with improved survival. First stick success decreased the risk of catheter failure (aHR 0.68, 95% CI 0.44–1.06, $p = 0.09$) but was not statistically significant. Factors associated with the increased risk of catheter failure included: depth of vein >1.2 cm (aHR 1.68, 95% CI 1.06–2.66, $p = 0.03$) and PIVC placement in right extremity (aHR 1.64, 95% CI 1.07–2.51, $p = 0.02$). Conclusions: This study demonstrated that catheter length in vein (>2.75 cm) was associated with improved US PIVC survival highlighting the value of longer catheters in US PIVC survival. Choosing targets in the non-dominant extremity with shallower depths (≤ 1.2 cm) may also increase catheter survival.

Balinski AM, Harvey RN, Ko RB, Smalley MM, Cutler NE and Siddiqi MT (2022). "Vaping-related clotting phenomena presenting as central retinal vein occlusion." Cureus 14(8): e27700.

[Full Text](#)

OUWB Medical Student Author

Department of Internal Medicine/Infectious Disease

Central retinal vein occlusion (CRVO) typically manifests as unilateral vision loss from thrombosis and occlusion of the central retinal vein in patients with thrombophilic risk factors. Here we report a case of a 23-year-old male with three weeks of intermittent left-sided eye pressure and vision loss, who was found to have decreased visual acuity, retinal hemorrhages, and an impending CRVO in his left eye. Upon further evaluation, infectious disease and autoimmune labs were normal, but he had mildly increased right heart pressures and hypercoagulable changes in the right middle cerebral artery. He denied any personal or family history of clotting disorders but noted a four-year history of vaping. He was started on anticoagulation and discharged. Outpatient genetic testing for Factor V Leiden, protein C, protein S, and prothrombin G20210 was normal. His visual acuity returned to normal in the left eye and the retinal hemorrhages resolved. After the exclusion of organic causes, significant vaping history was considered the likely etiology of his hypercoagulable state and resultant CRVO. Vaping-related clotting phenomena may explain the etiology of an otherwise unexplained CRVO, but further investigation of the long-term health consequences of electronic cigarette use is still needed.

Balinski AM, Vasbinder AL, Kerndt CC, Catalan TC, **Parry NP**, **Rehman RA**, Blakely P, Yeow RY, Leja MJ, Lao CD, Fecher LA and Hayek SS (2022). "Metastatic melanoma of the heart: Retrospective cohort study and systematic review of prevalence, clinical characteristics, and outcomes." Cancer Medicine. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

Background: Cardiac metastasis of melanoma is rare and typically diagnosed post-mortem. Here we perform a retrospective cohort study and systematic review of patients with metastatic melanoma to characterize prevalence, clinical characteristics, and outcomes of cardiac metastasis. Methods: We reviewed the electronic medical records of all outpatients with metastatic melanoma who underwent evaluation at the University of Michigan in Ann Arbor from January 2009 to January 2022, identifying patients with a clinical or histopathologic diagnosis of cardiac metastasis. We performed a systematic review of the literature to summarize the clinical characteristics and outcomes of patients with melanoma and cardiac metastasis. Results: Overall, 23 of 1254 (1.8%) patients with metastatic melanoma were diagnosed with cardiac metastasis. Cardiac metastasis was reported in the right ventricle (65%), left ventricle (35%), and right atrium (35%). A total of 11 (48%) patients experienced at least one cardiovascular complication after the diagnosis of cardiac metastasis, the most common being arrhythmia (30%), heart failure (22%), and pericardial effusion (17%). Immunotherapy was more commonly used in patients with cardiac metastasis (80% vs 65%; $p = 0.005$). Mortality at 2-years post-diagnosis was higher for patients with cardiac metastasis compared to those without (59% vs 37%; $p = 0.034$). Progression of malignancy was the underlying cause of death of all patients. Conclusions: Cardiac metastasis occurs in <2% of patients with metastatic melanoma, can affect all cardiac structures, and is associated with various cardiovascular complications and high mortality.

Basu-Ray I, Metri K, Khanra D, Revankar R, **Chinnaiyan KM**, Raghuram N, Mishra MC, Patwardhan B, Sharma M, Basavaraddi IV, Anand A, Reddy S, Deepak KK, Levy M, Theus S, Levine GN, Cramer H, Fricchione GL and Hongasandra NR (2022). "A narrative review on yoga: A potential intervention for augmenting immunomodulation and mental health in COVID-19." BMC Complementary Medicine & Therapies 22(1): 1-13.

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Department of Internal Medicine/Cardiovascular Disease

Background: The ongoing novel coronavirus disease 2019 (COVID-19) pandemic has a significant mortality rate of 3–5%. The principal causes of multiorgan failure and death are cytokine release syndrome and immune dysfunction. Stress, anxiety, and depression has been aggravated by the pandemic and its resultant restrictions in day-to-day life which may contribute to immune dysregulation. Thus, immunity strengthening and the prevention of cytokine release syndrome are important for preventing and minimizing mortality in COVID-19 patients. However, despite a few specific remedies that now exist for the SARS-CoV-2 virus, the principal modes of prevention include vaccination, masking, and holistic healing methods, such as yoga. Currently, extensive research is being conducted to better understand the neuroendocrinoimmunological mechanisms by which yoga alleviates stress and inflammation. This review article explores the anti-inflammatory and immune-modulating potentials of yoga, along with its role in reducing risk for immune dysfunction and impaired mental health. Methods: We conducted this narrative review from published literature in MEDLINE, EMBASE, COCHRANE databases. Screening was performed for titles and abstracts by two independent review authors; potentially eligible

citations were retrieved for full-text review. References of included articles and articles of major non-indexed peer reviewed journals were searched for relevance by two independent review authors. A third review author checked the excluded records. All disagreements were resolved through discussion amongst review authors or through adjudication by a fourth review author. Abstracts, editorials, conference proceedings and clinical trial registrations were excluded. Observations: Yoga is a nonpharmacological, cost-effective, and safe intervention associated with several health benefits. Originating in ancient India, this vast discipline consists of postures (asanas), breathing techniques (pranayama), meditation (dhyana/dharana), and relaxation. Studies have demonstrated yoga's ability to bolster innate immunity and to inhibit cytokine release syndrome. As an intervention, yoga has been shown to improve mental health, as it alleviates anxiety, depression, and stress and enhances mindfulness, self-control, and self-regulation. Yoga has been correlated with numerous cardioprotective effects, which also may play a role in COVID-19 by preventing lung and cardiac injury. Conclusion and Relevance: This review paves the path for further research on yoga as a potential intervention for enhancing innate immunity and mental health and thus its role in prevention and adjunctive treatment in COVID-19.

Bax AM, Yoon YE, Gianni U, Van Rosendael AR, Lu Y, Ma X, Goebel BP, Tantawy SW, Andreini D, Budoff MJ, Cademartiri F, **Chinnaiyan K**, Choi JH, Conte E, De Araújo Gonçalves P, Gottlieb I, Hadamitzky M, Leipsic JA, Maffei E, Pontone G, Shin S, Kim YJ, Lee BK, Chun EJ, Sung JM, Lee SE, Berman DS, Narula J, Lin FY, Chang HJ and Shaw LJ (2022). "Vessel-specific plaque features on coronary computed tomography angiography among patients of varying atherosclerotic cardiovascular disease risk." European Heart Journal Cardiovascular Imaging 23(9): 1171-1179.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Aims: The relationship between AtheroSclerotic CardioVascular Disease (ASCVD) risk and vessel-specific plaque evaluation using coronary computed tomography angiography (CCTA), focusing on plaque extent and composition, has not been examined. To evaluate differences in quantified plaque characteristics (using CCTA) between the three major coronary arteries [left anterior descending (LAD), right coronary (RCA), and left circumflex (LCx)] among subgroups of patients with varying ASCVD risk. **Methods and Results:** Patients were included from a prospective, international registry of consecutive patients who underwent CCTA for evaluation of coronary artery disease. ASCVD risk groups were <7.5% (low), 7.5-20% (intermediate), and ≥20% (high). Among the ASCVD risk groups, the three coronary arteries were compared regarding quantified plaque volume and composition. Whole-heart plaque quantification was performed in 1340 patients (age 60 ± 9 years, 58% men). Across low, intermediate, and high ASCVD risk patients, the volume of plaque increased proportionally but was least in the LCx (7.4, 9.0, and 25.3 mm³, respectively) as compared with the RCA (19.3, 32.6, and 67.0 mm³, respectively, all P ≤ 0.006) and LAD (39.9, 60.8, and 93.3 mm³, respectively, all P < 0.001). In each ASCVD risk group, the composition of plaque in the LCx exhibited the least necrotic core and fibrofatty plaque (P < 0.05 vs. LAD and RCA). **Conclusion:** Among patients with varying risk of ASCVD, plaque in the LCx is decidedly less and is comprised of less non-calcified plaque supporting prior evidence of the lower rates of acute coronary events in this vessel.

Becker S, Spiller HA, Badeti J, Funk AR, Casavant MJ, Zhu M, Michaels NL and Smith GA (2022). "Cocaine exposures reported to United States poison control centers, 2000–2020." Clinical Toxicology 60(7): 827-837.

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OUWB Medical Student Author

Objective: To investigate characteristics of cocaine exposures reported to US Poison Control Centers. **Methods:** Data from the National Poison Data System regarding cocaine-related calls to regional poison control centers from January 1, 2000 to December 31, 2020 were analyzed. **Results:** There were 59,466 first-ranked cocaine-related calls managed by poison control centers during the study period. Males accounted for more than two-thirds (70.3%) of these cases. The 20–29-year-old age group had the highest cocaine exposure rate, followed by 30–39-year-olds. Admission to a health care facility (HCF) occurred in 38.9% of cases and 41.1% of individuals had a serious medical outcome. Serious medical outcome (OR: 1.50, 95% CI: 1.39–1.61) and admission to a HCF (OR: 1.12, 95% CI: 1.06–1.19) were more likely to occur among individuals 13 years or older than among individuals <13 years old. Cocaine exposures involving additional substances were more likely to lead to a serious medical outcome (OR: 2.22, 95% CI: 2.14–2.29) and admission to a HCF (OR: 2.52, 95% CI: 2.43–2.61) than exposures to cocaine alone. Overall, the proportion of exposures resulting in a serious medical outcome increased from 39.9% in 2000 to 60.4% in 2020 ($p < 0.0001$). Likewise, the proportion of exposures resulting in admission to a HCF increased from 49.1% in 2000 to 54.4% in 2020 ($p < 0.0001$). There was also an increase in the rate of fatal cocaine cases from 2012 to 2020, driven by multiple-substance exposures. **Conclusions:** Cocaine exposures are a serious public health problem associated with substantial morbidity and mortality. The severity of cocaine exposures increased during the study period, reflected in an increased rate of fatal cocaine exposures since 2012 and increased proportions of serious medical outcomes and cases requiring admission to a health care facility. Additional efforts to prevent initiation of cocaine use and treat addiction among high-risk groups should be undertaken.

Bergin SP, Calvert SB, Farley J, Sun JL, Chiswell K, Dieperink W, Kluytmans J, Lopez-Delgado JC, Leon-Lopez R, Zervos MJ, Kollef MH, **Sims M**, Kabchi BA, Rubin D, Santiago J, Natarajan M, Tenaerts P, Fowler VG, Holland TL, Bonten MJ and Hulleger SJ (2022). "Prophetic EU: Prospective identification of pneumonia in hospitalized patients in the intensive care unit in European and United States cohorts." *Open Forum Infectious Diseases* 9(7): ofac231.

[Full Text](#)

Department of Internal Medicine/Infectious Disease

Background: The prospective identification of patients at high risk for hospital-acquired/ventilator-associated bacterial pneumonia may improve clinical trial feasibility and foster antibacterial development. In a prior study conducted in the United States, clinical criteria were used to prospectively identify these patients; however, these criteria have not been applied in a European population. **Methods:** Adults considered high risk for pneumonia (treatment with ventilation or high levels of supplemental oxygen) in the intensive care units of 7 European hospitals were prospectively enrolled from June 12 to December 27, 2017. We estimated the proportion of high-risk patients developing pneumonia according to US Food and Drug Administration guidance and a subset potentially eligible for antibacterial trial enrollment. We compared patient characteristics, treatment exposures, and pneumonia incidence in a European cohort and a previously described US cohort. **Results:** Of 888 high-risk patients, 211/888 (24%) were treated for possible pneumonia, and 150/888 (17%) met the Food and Drug Administration definition for hospital-acquired/ventilator-associated bacterial pneumonia. A higher proportion of European patients treated for possible pneumonia met the pneumonia definition (150/211 [71%] vs 537/1464 [37%]; $P < .001$). Among patients developing pneumonia, a higher proportion of European patients met antibacterial trial eligibility criteria (124/150 [83%] vs 371/537 [69%]; $P < .001$). **Conclusions:** Clinical criteria prospectively identified high-risk

patients with high rates of pneumonia in the European cohort. Despite higher rates of established risk factors and incident pneumonia, European patients were significantly less likely to receive antibiotics for possible pneumonia than US patients. Different treatment practices may contribute to lower rates of antibacterial trial enrollment in the United States.

Berweck S, Banach M, Gaebler-Spira D, Chambers HG, Schroeder AS, Geister TL, Althaus M, Hanschmann A, Vacchelli M, Bonfert MV, Heinen F and **Dabrowski E** (2022). "Safety profile and lack of immunogenicity of incobotulinumtoxinA in pediatric spasticity and sialorrhea: A pooled analysis." *Toxins* 14(9): 585.

[Full Text](#)

Department of Physical Medicine & Rehabilitation

IncobotulinumtoxinA, a pure botulinumtoxinA formulation, is free of accessory proteins. This analysis provides pooled safety data from phase 3 trials of children/adolescents (2–17 years), investigating incobotulinumtoxinA for the treatment of spasticity associated with cerebral palsy (at doses ≤ 20 U/kg (max. 500 U) per injection cycle (IC) for ≤ 6 ICs; three trials) or sialorrhea associated with neurologic disorders (at total doses of 20–75 U per IC for ≤ 4 ICs; one trial) for ≤ 96 weeks. Safety endpoints included the incidences of different types of treatment-emergent adverse events (TEAEs) and immunogenicity. IncobotulinumtoxinA dose groups were combined. Of 1159 patients (mean age 7.3 years, 60.4% males) treated with incobotulinumtoxinA, 3.9% experienced treatment-related TEAEs, with the most common being injection site reactions (1.3%) (both indications), muscular weakness (0.7%) (spasticity), and dysphagia (0.2%) (sialorrhea). Two patients (0.2%) experienced a treatment-related treatment-emergent serious adverse event, and 0.3% discontinued the study due to treatment-related TEAEs. No botulinumtoxinA-naïve patients developed neutralizing antibodies (NABs) after incobotulinumtoxinA. All children/adolescents with known pre-treatment status and testing positive for Nabs at final visit ($n = 7$) were previously treated with a botulinumtoxinA other than incobotulinumtoxinA. IncobotulinumtoxinA was shown to be safe, with very few treatment-related TEAEs in a large, diverse cohort of children/adolescents with chronic conditions requiring long-term treatment and was without new NAb formation in treatment-naïve patients.

Bhalerao A and **Cucullo L** (2022). "HIV-1 gp120 and tobacco smoke synergistically disrupt the integrity of the blood-brain barrier." *European Journal of Cell Biology* 101(4): 151271.

[Full Text](#)

Department of Foundational Medical Studies (OU)

In the United States, the Centers for Disease Control and Prevention (CDC) terms HIV and tobacco use among the ten most important public health challenges we face today. In the last decade, there has been a remarkable decrease in the number of deaths due to HIV/AIDS, especially after the widespread availability and use of combination antiretroviral therapy (cART). However, people living with HIV/AIDS have a heightened risk of chronic complications and comorbidities, including neurological disorders. Around 40–60 % of HIV-infected individuals progress to NeuroAIDS, a group of disorders caused primarily by HIV-mediated damage to the central and peripheral nervous systems, despite receiving cART. The detrimental effects of chronic smoking on the cerebrovascular system are also well studied and reported. Addictive behavior, such as smoking, is more common in HIV patients compared to the general population. In this context, given the existing immune suppression, smoking can pose a significant risk for the progression of the disease to NeuroAIDS by disrupting the integrity of the blood-brain barrier (BBB). Here we show that co-treatment with Tobacco Smoke Extract (TSE) and HIV-1 gp120 (HIV envelope glycoprotein) in primary cultures of human brain microvascular

endothelial cells promoted heightened cellular stress responses compared to control and individual treatments. Our findings suggest that a potential synergistic effect between smoke exposure and gp120 can worsen the loss of BBB viability, possibly exacerbating NeuroAIDS progression.

Bischof JJ, Elsaid MI, Bridges JFP, Rosko AE, Presley CJ, Abar B, Adler D, **Bastani A**, Baugh CW, Bernstein SL, Coyne CJ, Durham DD, Grudzen CR, Henning DJ, Hudson MF, Klotz A, Lyman GH, Madsen TE, Reyes-Gibby CC, Rico JF, Ryan RJ, Shapiro NI, **Swor R**, Thomas CR, Venkat A, Wilson J, Yeung SCJ, Yilmaz S and Caterino JM (2022). "Characterization of older adults with cancer seeking acute emergency department care: A prospective observational study." *Journal of Geriatric Oncology* 13(7): 943-951.

[Full Text](#)

Department of Emergency Medicine

Introduction: Disparities in care of older adults in cancer treatment trials and emergency department (ED) use exist. This report provides a baseline description of older adults ≥ 65 years old who present to the ED with active cancer. Materials and Methods: Planned secondary analysis of the Comprehensive Oncologic Emergencies Research Network observational ED cohort study sponsored by the National Cancer Institute. Of 1564 eligible adults with active cancer, 1075 patients were prospectively enrolled, of which 505 were ≥ 65 years old. We recruited this convenience sample from eighteen participating sites across the United States between February 1, 2016 and January 30, 2017. Results: Compared to cancer patients younger than 65 years of age, older adults were more likely to be transported to the ED by emergency medical services, have a higher Charlson Comorbidity Index score, and be admitted despite no significant difference in acuity as measured by the Emergency Severity Index. Despite the higher admission rate, no significant difference was noted in hospitalization length of stay, 30-day mortality, ED revisit or hospital admission within 30 days after the index visit. Three of the top five ED diagnoses for older adults were symptom-related (fever of other and unknown origin, abdominal and pelvic pain, and pain in throat and chest). Despite this, older adults were less likely to report symptoms and less likely to receive symptomatic treatment for pain and nausea than the younger comparison group. Both younger and older adults reported a higher symptom burden on the patient reported Condensed Memorial Symptom Assessment Scale than to ED providers. When treating suspected infection, no differences were noted in regard to administration of antibiotics in the ED, admissions, or length of stay ≤ 2 days for those receiving ED antibiotics. Discussion: We identified several differences between older (≥ 65 years old) and younger adults with active cancer seeking emergency care. Older adults frequently presented for symptom-related diagnoses but received fewer symptomatic interventions in the ED suggesting that important opportunities to improve the care of older adults with cancer in the ED exist.

Bishai SK, Ball GRS, Maceroni MR and Howard SD (2022). "Arthroscopic internal fixation of coracoid fractures: Surgical technique guide." *Arthroscopy Techniques* 11(8): e1509-e1514.

[Full Text](#)

Department of Orthopaedic Surgery

Fractures of the coracoid process are uncommon injuries and are usually the result of high-energy trauma or avulsion-type injuries. Typically coracoid fractures treated with nonoperative management have yielded good results. Operative treatment of coracoid fractures is reserved for a subset of clinical situations, including fracture nonunion. We detail our technique for arthroscopic debridement of a Type II coracoid fracture nonunion, as well as the use of arthroscopic-assisted percutaneous fixation for a Type II coracoid fracture.

Blackmond N, Provencher E, **Provencher S**, Zoma M, Goodman BD and **Silverman A** (2022). "Complicated open wound management in a free clinic setting." *Cureus* 14(7): e26605.

[Full Text](#)

OUWB Medical Student Author

Department of Internal Medicine/Cardiovascular Disease

Wound healing is a complex and integrated process that involves several interdependent overlapping stages, including hemostasis, inflammation, proliferation, and vascularization. Cellulitis and skin abscesses are among the most common skin and soft tissue infections. Cellulitis typically involves the deeper dermis of subcutaneous fat and tends to have a more indolent course with the development of localized symptoms over a few days. Skin abscesses are described as a collection of pus within the dermis or subcutaneous space. Diabetes mellitus (DM) is the leading cause of impaired wound healing and consequently has higher rates of patients developing soft tissue infections. Diabetic patients experience decreased early inflammatory cell infiltration but increased numbers of neutrophils and macrophages. Complications include bacteremia, metastatic infection, sepsis, and toxic shock syndrome. In this case, we describe a 50-year-old Caucasian uninsured male who was referred to the Gary Burnstein Clinic (GBC) from a nearby hospital for wound management after an incision and drainage of a large back abscess and uncontrolled type 2 diabetes mellitus (T2DM). The patient presented with a large erythematous, indurated lesion with a cruciate incision that spanned from his mid-thoracic spine to the medial border of his left scapula. The wound management course required strict follow-up to the clinic every 48-72 hours for debridement and monitoring. This was complicated by the GBC's limited resources along with the volunteer nurses' and physicians' availability. To avoid the patient being lost to follow-up, shared decision-making was utilized to create a schedule that was advantageous for both the patient and the clinic. Ultimately, the patient made a full recovery without any adverse events. This case highlights the gaps in care for the medically uninsured. We also showcase the passion and dedication our medical volunteers exhibit to care for the community. The GBC provides high-quality healthcare to bridge gaps in access to care by offering broad specialist access while ensuring continuity of care.

Bonfert M, Heinen F, Kaňovský P, Schroeder AS, Chambers HG, **Dabrowski E**, Geister TL, Hanschmann A, Althaus M, Banach M and Gaebler-Spira D (2022). "Spasticity-related pain in children/adolescents with cerebral palsy. Part 2 incobotulinumtoxinA efficacy results from a pooled analysis." *Journal of Pediatric Rehabilitation Medicine*. ePub Ahead of Print.

[Full Text](#)

Department of Physical Medicine & Rehabilitation

Purpose: This pooled analysis of data from three Phase 3 studies investigated the effects of incobotulinumtoxinA on spasticity-related pain (SRP) in children/adolescents with uni-/bilateral cerebral palsy (CP). Methods: Children/adolescents (ambulant and non-ambulant) were evaluated for SRP on increasingly difficult activities/tasks 4 weeks after each of four incobotulinumtoxinA injection cycles (ICs) using the Questionnaire on Pain caused by Spasticity (QPS; six modules specific to lower limb [LL] or upper limb [UL] spasticity and respondent type [child/adolescent, interviewer, or parent/caregiver]). IncobotulinumtoxinA doses were personalized, with all doses pooled for analysis. Results: QPS key item responses were available from 331 and 155 children/adolescents with LL- and UL-spasticity, respectively, and 841/444 (LL/UL) of their parents/caregivers. IncobotulinumtoxinA efficacy was evident with the first IC. Efficacy was sustained and became more robust with further subsequent ICs. By week 4 of the

last (i.e. fourth) IC, 33.8-53.3% of children/adolescents reported complete SRP relief from their baseline pain for respective QPS items. Children/adolescents reported reductions in mean LL SRP intensity at levels that surpassed clinically meaningful thresholds. Similarly, parents/caregivers observed complete SRP relief and less frequent SRP with incobotulinumtoxinA. Similar results were found for UL SRP. Conclusion: These findings indicate that incobotulinumtoxinA could bring considerable benefit to children/adolescents with spasticity by reducing SRP, even during strenuous activities.

Boothby-Shoemaker W, **Rehman R**, Hamzavi I, Huggins RH and Mohammad TF (2022). "Recommendations to optimize patient care in hidradenitis suppurativa clinics: Our experience." Dermatology. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

Borrelli M, Nasrollahi T, **Raskin J**, Khan S and Alexander RE (2022). "Laryngotracheal recurrent papillomatosis: A case study and survey of surgical and systemic management." Ear Nose & Throat Journal. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

This case report presents a 72-year-old man with longstanding recurrent respiratory papillomatosis (RRP). He has undergone multiple procedures for the condition, including an apparent urgent surgical airway followed by tracheoplasty repair. Modern management of complicated RRP should include both local debulking and systemic approaches. Systemic bevacizumab (Avastin) has shown some initial success as an effective treatment option, in addition to other medications such as pembrolizumab. Other future care strategies may include an HPV vaccination and other adjuvants; vaccination has been reported to have the possibility of drastically reducing the incidence of RRP.

Borrelli M, Nasrollahi T, **Raskin J**, Khan S and Mehdizadeh OB (2022). "Severe airway edema following calcium hydroxylapatite (CaHA) injection augmentation." Ear Nose & Throat Journal. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

This case study presents an abnormal complication after routine injection augmentation using calcium hydroxylapatite (CaHA) vocal fold filler in-office on a 73-year-old female. The patient presented initially with severe dysphonia, hypophonia, and a past surgical history of total thyroidectomy, bilateral neck dissection, and a right lateral neck dissection for history of metastatic papillary thyroid carcinoma. She also had a past medical history of hypothyroidism. Post-injection of CaHA, the patient developed severe laryngeal edema, limited vocal cord mobility, obliteration of the pyriform, and a significantly reduced airway aperture requiring intensive care monitoring. Although uncommon, injectable fillers can result in complications which can be severe. Careful technique, the volume of injectate, and hypersensitivity should be considered in reducing complications following injection augmentation. There are multiple injection techniques to consider. The most direct approach is with direct laryngoscopy to allow for visualization of glottic incompetence. A smaller slotted laryngoscope can be considered for vocal fold injection as an alternative and without endotracheal intubation. Although these techniques allow for injection, real-time assessment of vocal fold closure is done in an awake patient. Therefore, laryngeal injection can be considered via percutaneous, per-oral, and trans-

nasal approaches.

Brummett A and Eberl JT (2022). "The many metaphysical commitments of secular clinical ethics: Expanding the argument for a moral-metaphysical proceduralism." Bioethics 36(7): 783-793.

[Full Text](#)

Department of Foundational Medical Studies (OU)

The rich moral diversity of academic bioethics poses a paradox for the practice of giving moral recommendations in secular clinical ethics: How are ethicists to provide moral guidance in a pluralistic society? The field has responded to this challenge with a "procedural approach," but defining this term stirs debate. Some have championed a contentless proceduralism, where ethicists work only to help negotiate resolutions among stakeholders without making any moral recommendations. Others have defended a moral proceduralism by claiming that ethicists should make moral recommendations that are grounded in bioethical consensus (e.g., relevant law, policy, professional consensus statements, and bioethics literature), which is secured using moral principles such as respect for persons or justice. In contrast, we develop a moral-metaphysical proceduralism by identifying many metaphysical commitments in points of secular bioethical consensus. The moral-metaphysical view of secular clinical ethics is important because it challenges the discipline to accept the substantive philosophical foundations required to support giving moral recommendations in a pluralistic context, which may lead to further insights about the nature of the field.

Brummett AL and Watson JC (2022). "An argument for standardized ethical directives for secular healthcare services." The Journal of Clinical Ethics 33(3): 175-188.

[Full Text](#)

Department of Foundational Medical Studies (OU)

We argue that the American Society for Bioethics and Humanities has endorsed a facilitation approach to clinical ethics consultation that asserts that bioethicists can offer moral recommendations that are well-grounded in bioethical consensus. We claim that the closest thing the field currently has to a citable, nationally endorsed bioethical consensus are the 22 Core References used to construct the questions for the Healthcare Ethics Consultant-Certified (HEC-C) exam. We acknowledge that the Core References reflect some important points of bioethical consensus, but note they are unwieldy, repetitive, and sometimes inconsistent on important issues faced by clinical ethicists. In this article, we draw carefully qualified inspiration from the Ethical and Religious Directives for Catholic Health Care Services (ERDs) to argue for the creation of a concise, nationally endorsed bioethical consensus document on moral issues commonly faced in clinical ethics, what we call the Standardized Ethical Guidelines for Secular Health Care Services (SEGs). We observe that such a document would better meet the expectations of stakeholders, clinical ethicists, and their trainees who desire moral recommendations grounded in a clearly articulated bioethical consensus, and we defend the SEGs from some common objections.

Brummett AL and Watson JC (2022). "Responding to Fiester's critique of a bioethical consensus project." The Journal of Clinical Ethics 33(3): 198-201.

[Full Text](#)

Department of Foundational Medical Studies (OU)

We respond to Autumn Fiester's critique that our proposed bioethical consensus project amounts to "ethical hegemony," and evaluate her claim that ethicists should restrict themselves to "mere process" recommendations. We argue that content recommendations are an

inescapable aspect of clinical ethics consultation, and our primary concern is that, without standardization of bioethical consensus, our field will vacillate among appeals to the disparate claims in the 22 "Core References," unsustainable efforts to defend value-neutral process recommendations, or become a practice of Lone Ranger clinical ethicists. We contend that a consensus document that captures the basic moral commitments of patients and careproviders is the next step in the professional evolution of our field.

Bughrara MS, Almsaddi T, John J, Prentice B, Johnson J, Henriquez O and Folbe AJ (2022). "Fibrosarcomas of the paranasal sinuses: A systematic review." *Cureus* 14(8): e27868.

[Full Text](#)

OUWB Medical Student Author

Department of Surgery

Fibrosarcomas are rare, malignant neoplasms of mesenchymal origin. Fibrosarcomas appear to be sporadic, but cases of fibrosarcomas secondary to radiation of nasopharyngeal carcinomas have been reported. Paranasal sinus fibrosarcomas (PNFS) are even rarer with few cases being reported since the 1950s. There have been several retrospective cohort studies examining PNFS; however, to our knowledge, no comprehensive review exists. This review aims to summarize the findings of all published cases of PNFS from the 1950s to the 2020s. We hope that a comprehensive review will assist in accurate and early diagnoses of PNFS, and help guide treatment as early treatment is associated with a favorable prognosis. This systematic review reports results following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A search was conducted on PubMed, Embase, and Cochrane Library. Studies were screened using established inclusion/exclusion criteria. A total of 26 studies were included for data extraction, and relevant data were collected and analyzed. In our study, the most common study type was case reports (n = 19). The most common presentation for PNFS included male gender (n = 17) with maxillary sinus (n = 57) involvement. Patients commonly presented with complaints of nasal obstruction (n = 15), epistaxis (n = 11), and facial fullness/pain (n = 9). Surgical resection was the mainstay treatment, with the use of chemotherapy or radiation depending on surgical margins and resectability. The diagnosis was commonly made with histological analysis. This review of the literature provides a summary and reference of important presenting factors, elements of diagnosis, and treatment options regarding PNFS to help bring awareness and guide the treatment of such a rare disease. Moving forward, there is a greater need for larger standardized studies that can further complement our findings, as well as more consistent reporting of cases.

Campbell JP, Chiang MF, Chen JS, Moshfeghi DM, Nudleman E, Ruambivoonsuk P, Cherwek H, Cheung CY, Singh P, Kalpathy-Cramer J, Ostmo S, Eydelman M, Chan RVP and **Capone A** (2022). "Artificial intelligence for retinopathy of prematurity validation of a vascular severity scale against international expert diagnosis." *Ophthalmology* 129(7): E69-E76.

[Full Text](#)

Department of Ophthalmology

Purpose: To validate a vascular severity score as an appropriate output for artificial intelligence (AI) Software as a Medical Device (SaMD) for retinopathy of prematurity (ROP) through comparison with ordinal disease severity labels for stage and plus disease assigned by the International Classification of Retinopathy of Prematurity, Third Edition (ICROP3), committee. Design: Validation study of an AI-based ROP vascular severity score. Participants: A total of 34 ROP experts from the ICROP3 committee. Methods: Two separate datasets of 30 fundus photographs each for stage (0-5) and plus disease (plus, preplus, neither) were labeled by

members of the ICROP3 committee using an open-source platform. Averaging these results produced a continuous label for plus (1-9) and stage (1-3) for each image. Experts were also asked to compare each image to each other in terms of relative severity for plus disease. Each image was also labeled with a vascular severity score from the Imaging and Informatics in ROP deep learning system, which was compared with each grader's diagnostic labels for correlation, as well as the ophthalmoscopic diagnosis of stage. Main Outcome Measures: Weighted kappa and Pearson correlation coefficients (CCs) were calculated between each pair of grader classification labels for stage and plus disease. The Elo algorithm was also used to convert pairwise comparisons for each expert into an ordered set of images from least to most severe. Results: The mean weighted kappa and CC for all interobserver pairs for plus disease image comparison were 0.67 and 0.88, respectively. The vascular severity score was found to be highly correlated with both the average plus disease classification (CC = 0.90, P < 0.001) and the ophthalmoscopic diagnosis of stage (P < 0.001 by analysis of variance) among all experts. Conclusions: The ROP vascular severity score correlates well with the International Classification of Retinopathy of Prematurity committee member's labels for plus disease and stage, which had significant intergrader variability. Generation of a consensus for a validated scoring system for ROP SaMD can facilitate global innovation and regulatory authorization of these technologies.

Ceresnie MS, Maghfour J, El Dairi K, **Mokhtari M**, Hamzavi IH, Lim HW and Kohli I (2022). "The impact of the spectral composition of long-wavelength ultraviolet a1 and visible light on cutaneous biologic effects." Journal of Investigative Dermatology 142(8): S106-S106.

[Full Text](#)

OUWB Medical Student Author

Chagpar AB, Dupont E, Chiba A, Levine EA, Gass JS, Lum S, **Brown E**, Fenton A, Solomon NL, Ollila DW, Murray M, Gallagher K, Howard-McNatt M, Lazar M, Garcia-Cantu C, Walters L, Pandya S, Mendiola A, Namm JP and Authors S (2022). "Are we choosing wisely? Drivers of preoperative MRI use in breast cancer patients." American Journal of Surgery 224(1): 8-11.

[Full Text](#)

Department of Surgery

Introduction: Factors contributing to the use of preoperative MRI remain poorly understood. Methods: Data from a randomized controlled trial of stage 0-3 breast cancer patients undergoing breast conserving surgery between 2016 and 2018 were analyzed. Results: Of the 396 patients in this trial, 32.6% had a preoperative MRI. Patient age, race, ethnicity, tumor histology, and use of neoadjuvant therapy were significant predictors of MRI use. On multivariate analysis, younger patients with invasive lobular tumors were more likely to have a preoperative MRI. Rates also varied significantly by individual surgeon (p < 0.001); in particular, female surgeons (39.9% vs. 24.0% for male surgeons, p = 0.001) and those in community practice (58.9% vs. 14.2% for academic, p < 0.001) were more likely to order preoperative MRI. Rates declined over the two years of the study, particularly among female surgeons. Conclusions: Preoperative MRI varies with patient age and tumor histology; however, there remains variability by individual surgeon.

Chaiyasate K, Gupta R, Boudiab EM, Vega D, Hart J, Nossoni F, Lu S, Powers JM, Hobson G and Sachanandani NS (2022). "Comprehensive treatment and reconstructive algorithm for functional restoration after ballistic facial injury." Plastic Reconstructive Surgery Global Open 10(7): e4453.

[Full Text](#)

Department of Surgery

OUWB Medical Student Author

Background: Ballistic facial injuries are rare, with most trauma centers reporting 1-20 cases annually. These patients present significant management challenges to reconstructive surgeons, not only due to their rarity but also due to the complex decision-making process that is involved. The aim of this study was to review our experience with the application of craniofacial microsurgery in management of facial gunshot wounds. Methods: A retrospective review of a single-surgeon experience at a level I trauma center from 2011 to 2020 for patients sustaining self-inflicted gunshot wounds to the face requiring microsurgical reconstruction was performed. Outcomes included reconstructive techniques, free flap type and indication, airway evolution, feeding modality, respective timing of interventions, and complications. Results: Between 2012 and 2021, 13 patients presented for microsurgical reconstruction at our institution for gunshot wounds to the face. The majority (90%) of patients were men, and the average age at time of injury was 26. The median from the time of injury to first free flap was 93 days. Thirteen patients represented 23 free flaps. On average, patients underwent a total of two free flaps. The most common microsurgical flap was the fibula flap (14) followed by the radial forearm flap (6). Conclusion: Based on our findings, we describe a novel algorithm for function restoration and aesthetic revisions based on injury location. Underlying principles include avoiding early use of reconstruction plates, establishing occlusion early, and aligning bony segments using external fixation. An algorithmic approach to these injuries can improve outcomes.

Chaiyasate K, Gupta R, John J, Chaiyasate S, Powers J, Nguyen A, Issa C, Hart J, Goldman JJ and Sachanandani NS (2022). "Utilization of a chimeric medial femoral condyle free flap for mandibular osteoradionecrosis." *PRS Global Open* 10(8): e4489.

[Full Text](#)

OUWB Medical Student Author

Department of Surgery

Background: Primary options for oromandibular reconstruction with osteocutaneous free flaps are the vascularized fibula and iliac crest. Complications of mandible reconstruction are not uncommon and include osteomyelitis, malunion, and osteoradionecrosis (ORN) after radiation therapy. The medial femoral condyle (MFC) free flap is an established salvage option for carpal reconstruction in hand surgery, frequently used for scaphoid nonunion and avascular necrosis. We hypothesize that the MFC flap can be utilized to restore blood supply and reverse the negative effects of radiotherapy in patients who require mandibular reconstruction due to ORN. Methods: A retrospective chart review was conducted at Beaumont Health System, Royal Oak, for patients who underwent MFC free flap reconstruction for mandibular ORN between the years 2012 and 2018. Demographic data, operative details, complications, medical comorbidities, and patient outcomes were retrospectively gathered. Results: A total of four patients were isolated. Four patients developed ORN after resection of squamous cell carcinoma and adjuvant radiotherapy. No patients experienced donor site deficits. Revisions after MFC reconstruction were dependent on individual aesthetics and involvement of neighboring tissue. All four patients continue to be followed with no current issues to the osseous component of the MFC flap. Conclusion: Utilization of the MFC periosteal flap is a viable option in selected patients to salvage nonunion/resorption of mandible reconstruction and ORN of the mandible. Our experience found that the MFC is able to provide pain resolution and healing of intraoral soft tissue defects, and may halt the progression of ORN of the mandible.

Chary A, Liu SW, Southerland L, **Cameron-Comasco L**, Ouchi K, **Carpenter CR**, Boyer EW, Naik AD and Kennedy M (2022). "Emergency department policies to improve care experiences for older adults during

the COVID-19 pandemic." *Journal of Geriatric Emergency Medicine* 3(2): Article 3.

[Full Text](#)

Department of Emergency Medicine

Department of Internal Medicine/Infectious Disease

Chen SP, **Qin A** and **Yan D** (2022). "Dynamic characteristics and predictive capability of tumor voxel dose-response assessed using F-18-FDG PET/CT imaging feedback." *Frontiers in Oncology* 12: 876861.

[Full Text](#)

Department of Radiation Oncology

Purpose: Tumor voxel dose-response matrix (DRM) can be quantified using feedback from serial FDG-PET/CT imaging acquired during radiotherapy. This study investigated the dynamic characteristics and the predictive capability of DRM. Methods: FDG-PET/CT images were acquired before and weekly during standard chemoradiotherapy with the treatment dose 2 Gy x 35 from 31 head and neck cancer patients. For each patient, deformable image registration was performed between the pretreatment/baseline PET/CT image and each weekly PET/CT image. Tumor voxel DRM was derived using linear regression on the logarithm of the weekly standard uptake value (SUV) ratios for each tumor voxel, such as SUV measured at a dose level normalized to the baseline SUV0. The dynamic characteristics were evaluated by comparing the DRM; estimated using a single feedback image acquired at the *i*th treatment week (*i*=1, 2, 3, or 4) to the DRM estimated using the last feedback image for each patient. The predictive capability of the DRM estimated using 1 or 2 feedback images was evaluated using the receiver operating characteristic test with respect to the treatment outcome of tumor local-regional control or failure. Results: The mean +/- SD of tumor voxel SUV measured at the pretreatment and the 1st, 2nd, 3rd, 4th, and last treatment weeks was 6.76 +/- 3.69, 5.72 +/- 3.43, 3.85 +/- 2.22, 3.27 +/- 2.25, 2.5 +/- 1.79, and 2.23 +/- 1.27, respectively. The deviations between the DRM; estimated using the single feedback image obtained at the *i*th week and the last feedback image were 0.86 +/- 4.87, -0.06 +/- 0.3, -0.09 +/- 0.17, and -0.09 +/- 0.12 for DRM1, DRM2, DRM3, and DRM4, respectively. The predictive capability of DRM3 and DRM4 was significant (*p* < 0.001). The area under the curve (AUC) was increased with the increase in treatment dose level. The DRMs constructed using the single feedback image achieved an AUC of 0.86 similar to 1. The AUC was slightly improved to 0.94 similar to 1 for the DRMs estimated using 2 feedback images. Conclusion: Tumor voxel metabolic activity measured using FDG-PET/CT fluctuated noticeably during the first 2 treatment weeks and obtained a stabilized reduction rate thereafter. Tumor voxel DRM constructed using a single FDG-PET/CT feedback image after the 2nd treatment week (>20 Gy) has a good predictive capability. The predictive capability improved continuously using a later feedback image and marginally improved when two feedback images were applied.

Dabrowski E, Delgado MR, Oleszek J, Dursun N, Del-Rio JC, Bonikowski M, Regnault B, Page S and Tilton A (2022). "Abobotulinumtoxina efficacy and safety in children with upper limb spasticity previously treated with botulinum toxin." *Toxicon* 214: S14-S15.

[Request Form](#)

Department of Physical Medicine & Rehabilitation

David S and **Khandhar PB** (2022). "Double-blind study." *StatPearls*.

[Full Text](#)

Department of Pediatrics

A clinical research study or a clinical trial is an experiment or observation performed on human

subjects to generate data on the safety and efficacy of various biomedical and behavioral interventions.

De Franco YP, Segovia N, **Marx YF**, Hoxhaj R and Palacios CF (2022). "A pilot study of changes in urinary podocalyxin levels during normal pregnancy and labor." Romanian Journal of Internal Medicine 60(3): 160-165.

[Full Text](#)

Department of Obstetrics & Gynecology

Introduction: Increased urinary podocalyxin, a surrogate marker of podocyte detachment, has been shown in preeclampsia and eclampsia, but there is a paucity of data of the effect of normal pregnancy on its urinary excretion. We aimed to describe these changes in this pilot study. Methods: Urine podocalyxin levels were measured in 115 pregnant women. Of these, 12 women were in the second trimester of gestation, 57 in the third trimester and 46 women were in labor. Results: The median [IQR] urinary podocalyxin levels were 0.81 [0.27, 3.68], 0.92 [0.44, 5.49] and 64.7 [30.5, 106.3] ng/mg creatinine in the second trimester, third trimester, and during labor, respectively ($p < 0.0001$). Patients with hematuria during labor had higher levels of urinary podocalyxin (128.6 [79.8, 169.6] ng/mg creatinine). There was a moderate correlation between gestational age and urinary podocalyxin levels ($r = 0.63$, $p < 0.0001$). Conclusion: Urinary podocalyxin levels were low in normal pregnancies and increased significantly during labor and with hematuria.

Delavari S, Arabshahi KS, Amini M, Aalaa M, Pourbairamian G, Bahoosh N, Asadi N, **Dalal B**, Kojuri J, Hamidi H and Delavari S (2022). "The relationship between experiences level and clinical decision-making skill in midwifery students: A cross-sectional study." Medical Journal of the Islamic Republic of Iran 36(1): 80.

[Full Text](#)

Department of Internal Medicine/Pulmonary & Critical Care Medicine

Devine M, Merriott DJ, No HJ, Lau B, Say C, Yoo C, Yi E, **Ko RB**, Neal JW, Wakelee HA, Das M, Loo BW, Diehn M, Chin AL and Vitzthum LK (2022). "Isolated nodal recurrence after definitive stereotactic ablative radiation therapy for non-small cell lung cancer." Practical Radiation Oncology. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

Purpose: Stereotactic ablative radiation therapy (SABR) results in high rates of primary tumor control for early-stage non-small cell lung cancer (NSCLC). For patients with isolated hilar or mediastinal nodal recurrence (INR) after SABR, the optimal salvage treatment strategy is unclear. The purpose of this study was to determine the rate of INR after SABR for early-stage NSCLC and to describe patterns of care and treatment outcomes after salvage therapy. Methods and Materials: This retrospective cohort study included 342 patients with stage T1-3N0M0 NSCLC treated with definitive SABR from 2003 to 2018. We evaluated the incidence of INR and baseline factors between patients who did and did not experience INR. Among patients who experienced INR, we described treatment patterns and outcomes including overall survival (OS) and progression free survival (PFS) from the time of nodal failure using the Kaplan-Meier method. Results: With a median follow-up of 3.3 years, the 3-year INR rate was 10.6% (95% CI, 6.6%-13.4%). Among the 34 patients experiencing INR, the 3-year rates of OS and PFS were 39.3% (24.4%-63.3%) and 26.7% (14.1%-40.3%), respectively. The 34 patients with INR were treated with radiation therapy alone (26.7%), concurrent chemoradiation therapy (43.3%),

chemotherapy alone (13.3%), or observation (16.7%). Patients treated with concurrent chemoradiation therapy had the best survival outcomes, with a 3-year OS and PFS of 81.5% (61.1%-100.0%) and 63.9% (40.7%-100.0%), respectively. Of the patients treated with salvage radiation therapy or concurrent chemoradiation therapy, 14.3% experienced grade 3 toxic effects, and no patients had grade ≥ 4 toxic effects. Conclusions: In this study, INR occurred in approximately 10% of patients treated with SABR for early-stage NSCLC. The highest rates of OS and PFS among patients with INR were observed in those treated with salvage chemoradiation therapy.

Dexter DJ, **Kado H**, Schor J, Annambhotla S, Olivieri B, Mojibian H, Maldonado TS, Gandhi S, Paulisin J, Bunte MC, Angel W, Roberts J, Veerina K, Abramowitz S, Elmasri F, Hnath J, Jung M, Long D, Sanchez L, Cosme O, Skripochnik E, Lodha A, Shaikh A, King C, Bisharat M and Beasley RE (2022). "Interim outcomes of mechanical thrombectomy for deep vein thrombosis from the all-comer clout registry." Journal of Vascular Surgery: Venous and Lymphatic Disorders 10(4): 832-840.e832.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Objectives: The multicenter, prospective, single arm CLOUT registry assesses the safety and effectiveness of the ClotTrier System (Inari Medical, Irvine, CA) for the treatment of acute and nonacute lower extremity deep vein thrombosis (DVT) in all-comer patients. Reported here are the outcomes of the first 250 patients. **Methods:** All-comer patients with lower extremity DVT were enrolled, including those with bilateral DVT, those with previously failed DVT treatment, and regardless of symptom duration. The primary effectiveness end point is complete or near-complete ($\geq 75\%$) thrombus removal determined by independent core laboratory-adjudicated Marder scores. Safety outcomes include serious adverse events through 30 days and clinical outcomes include post-thrombotic syndrome severity, symptoms, pain, and quality of life through 6 months. **Results:** The median age was 62 years and 40% of patients had contraindications to thrombolytics. A range of thrombus chronicity (33% acute, 35% subacute, 32% chronic) was observed. No patients received thrombolytics and 99.6% were treated in a single session. The median thrombectomy time was 28 minutes. The primary effectiveness end point was achieved in 86% of limbs. Through 30 days, one device-related serious adverse event occurred. At 6 months, 24% of patients had post-thrombotic syndrome. Significant and sustained improvements were observed in all clinical outcomes, including the Revised Venous Clinical Severity Score, the numeric pain rating scale, and the EuroQol Group 5-Dimension Self-Report Questionnaire. **Conclusions:** The 6-month outcomes from the all-comer CLOUT registry with a range of thrombus chronicities demonstrate favorable effectiveness, safety, and sustained clinical improvements.

Diokno AC (2022). "The role of testosterone in men's health: Is it time for a new approach?" International Urology and Nephrology. ePub Ahead of Print.

[Full Text](#)

Department of Urology

Purpose: Because of many unanswered questions regarding men's health, a literature review was performed to better understand the role of testosterone and testosterone replacement therapy (TRT) in the management of hypogonadism and aging related prostate gland diseases (ARPGD) including prostate cancer (PCa) and benign prostatic hyperplasia (BPH) with lower urinary tract symptoms (LUTS). **Methods:** The PubMed database was screened for pertinent peer reviewed articles published during the last four decades that culminated in the positions and recommendations in this paper. **Results:** Hypogonadism seriously impacts men's health, and

the diagnosis remains controversial. The incidence of ARPGD is projected to increase worldwide and treatment still has significant limitations. There is compelling evidence that lower, not higher, testosterone levels trigger the development of PCa and BPH through androgen receptor over-expression. TRT was found to be safe and effective in treating hypogonadism including in PCa survivors and those harboring PCa. There is also evidence that TRT might reduce the incidence and prevalence of ARPGD. Conclusions and Recommendations: This review synthesizes a wide-ranging compendium of basic science and clinical research that strongly encourages altering the present approach to diagnosing and treating men with hypogonadism and ARPGD. These findings underscore the importance of avoiding significant testosterone decline and support the use of TRT. Ten recommendations are offered as a framework for the way forward. It is now time for clinicians, payers, researchers, funding agencies, professional associations, and patient advocacy groups to embrace this new paradigm to increase longevity and improve the quality of life.

Dowker SR, Smith G, O'Leary M, Missel AL, Trumpower B, Hunt N, Herbert L, Sams W, Kamdar N, Coulter-Thompson EI, Shields T, **Swor R**, Domeier R, Abir M, Friedman CP, Neumar RW and Nallamothu BK (2022). "Assessment of telecommunicator cardiopulmonary resuscitation performance during out-of-hospital cardiac arrest using a standardized tool for audio review." *Resuscitation* 178: 102-108.

[Full Text](#)

Department of Emergency Medicine

Objective: Telecommunicator cardiopulmonary resuscitation (T-CPR) is a critical component of optimized out-of-hospital cardiac arrest (OHCA) care. We assessed a pilot tool to capture American Heart Association (AHA) T-CPR measures and T-CPR coaching by telecommunicators using audio review. **Methods:** Using a pilot tool, we conducted a retrospective review of 911 call audio from 65 emergency medical services-treated out-of-hospital cardiac arrest (OHCA) patients. Data collection included events (e.g., OHCA recognition), time intervals, and coaching quality measures. We calculated summary statistics for all performance and quality measures. **Results:** Among 65 cases, the patients' mean age was 64.7 years (SD: 14.6) and 17 (26.2%) were women. Telecommunicator recognition occurred in 72% of cases (47/65). Among 18 non-recognized cases, reviewers determined 12 (66%) were not recognizable based on characteristics of the call. Median time-to-recognition was 76 seconds (n = 40; IQR:39-138), while median time-to-first-instructed-compression was 198 seconds (n = 26; IQR:149-233). In 36 cases where coaching was needed, coaching on compression-depth occurred in 27 (75%); -rate in 28 (78%); and chest recoil in 10 (28%) instances. In 30 cases where repositioning was needed, instruction to position the patient's body flat occurred in 18 (60%) instances, on-back in 22 (73%) instances, and on-ground in 22 (73%) instances. **Conclusions:** Successful collection of data to calculate AHA T-CPR measures using a pilot tool for audio review revealed performance near AHA benchmarks, although coaching instructions did not occur in many instances. Application of this standardized tool may aid in T-CPR quality review.

du Fay de Lavallaz J, Zimmermann T, Badertscher P, Lopez-Ayala P, Nestelberger T, Miró Ò, Salgado E, Zaytseva X, Gafner MS, Christ M, Cullen L, Than M, Martin-Sanchez FJ, Di Somma S, Peacock WF, Keller DI, Costabel JP, Sigal A, Puelacher C, Wussler D, Koechlin L, Strebel I, Schuler S, Manka R, Bilici M, Lohrmann J, Kühne M, Breidthardt T, **Clark CL**, Probst M, Gibson TA, Weiss RE, Sun BC, Mueller C, Widmer V, Leu K, Reichlin T, Shrestha S, Freese M, Krisai P, Belkin M, Kawecki D, Morawiec B, Muzyk P, Nowalany-Kozielska E, Geigy N, Martinez-Nadal G, Fuenzalida Inostroza CI, Mandrión JB, Poepping I, Greenslade J, Hawkins T, Rentsch K, Mitrovic S, von Eckardstein A, Buser A, Osswald S, Walter J, Adler DH, **Bastani A**, Baugh CW, Caterino JM, Diercks DB, Hollander JE, Nicks BA, Nishijima DK, Shah MN,

Stiffler KA, Wilber ST and Storrow AB (2022). "Performance of the American Heart Association/American College of Cardiology/Heart Rhythm Society versus European society of cardiology guideline criteria for hospital admission of patients with syncope." [Heart Rhythm](#). ePub Ahead of Print.

[Full Text](#)

Department of Emergency Medicine

Background: Current American College of Cardiology/American Heart Association/Heart Rhythm Society (ACC/AHA/HRS) and European Society of Cardiology (ESC) guidelines recommend different strategies to avoid low-yield admissions in patients with syncope. Objective: The purpose of this study was to directly compare the safety and efficacy of applying admission criteria of both guidelines to patients presenting with syncope to the emergency department in 2 multicenter studies. Methods: The international BASEL IX (BASEL Syncope Evaluation) study (median age 71 years) and the U.S. SRS (Improving Syncope Risk Stratification in Older Adults) study (median age 72 years) were investigated. Primary endpoints were sensitivity/specificity for the adjudicated diagnosis of cardiac syncope (BASEL IX only) and 30-day major adverse cardiovascular events (30d-MACE). Results: Among 2560 patients in the BASEL IX and 2085 in SRS studies, ACC/AHA/HRS and ESC criteria recommended admission for a comparable number of patients in BASEL IX (27% vs 28%), but ACC/AHA/HRS criteria less often in SRS (19% vs 32%; $P < .01$). Recommendations were discordant in ~25% of patients. In BASEL IX, sensitivity for cardiac syncope and 30d-MACE among patients without admission criteria was comparable for ACC/AHA/HRS and ESC criteria (64% vs 65%, $P = .86$; and 67% vs 71%, $P = .15$, respectively). In SRS, sensitivity for 30d-MACE was lower with ACC/AHA/HRS (54%) vs ESC criteria (88%; $P < .001$). Similarly, specificity for cardiac syncope and 30d-MACE in BASEL IX was comparable for both guidelines, but in SRS the ACC/AHA/HRS guidelines showed a higher specificity for 30d-MACE than the ESC guidelines. Conclusion: ACC/AHA/HRS and ESC guidelines showed disagreement regarding admission for 1 in 4 patients and had only modest sensitivity, all indicating possible opportunities for improvements.

Easton RW, Easton M, Papakonstantinou NS, Vibert B, Ahlgren B, Lipphardt M, Yeh H-H, Schultz LR and Pestano C (2022). "P33. Incidence, risk factors and clinical outcomes of cervical hematoma: An analysis from the Michigan Spine Surgery Improvement Collaborative Registry." [Spine Journal](#) 22(9): S141-S142.

[Full Text](#)

Department of Orthopaedic Surgery

Easton RW, Lipphardt M, Papakonstantinou NS, Silvasi D, Smith G, Chen N-W, Ahlgren A, Ahlgren B, Vibert B, Sagante A and Pestano C (2022). "P67. ERAS protocol associated with improved measurable outcomes in patients undergoing lumbar spinal fusion." [Spine Journal](#) 22(9): S158-S158.

[Full Text](#)

Department of Orthopaedic Surgery

Eisenbrey D, Dunne RB, Fales W, **Torossian K** and **Swor R** (2022). "Describing prehospital deliveries in the state of Michigan." [Cureus](#) 14(7): e26723.

[Full Text](#)

OUWB Medical Student Author

Department of Emergency Medicine

Introduction: We observed clinically that prehospital deliveries locally appeared to have a high rate of complications and appeared associated with midwife deliveries. There is scant literature that addresses prehospital deliveries across a state. We set out to describe utilization, complications, and short-term outcomes of EMS-attended prehospital deliveries in Michigan in

2015, and to describe the relationship between prehospital delivery and socioeconomic status (SES). Methods: We identified candidate cases for prehospital deliveries through the Michigan EMS Information System (MI-EMSIS). To assess the relationship of SES with the frequency of EMS delivery, we utilized the mean income of the patient residences' zip codes. Results: We identified 223 EMS-attended deliveries from 1.6 million MI-EMSIS records. Most births were normal vaginal deliveries on the scene or en route to the hospital (92, 40.0%) or delivered prior to EMS arrival (58, 25.4%). Maternal or fetal complications were identified in 69 (32.0%) deliveries. We identified a few midwife-attended deliveries (31), but these had a high rate of complications (19, 61.3%). The frequency of prehospital delivery was inversely related to estimated patient income (Pearson=-0.85). Conclusions: EMS deliveries were rare and most were normal vaginal deliveries, but almost a third had complications. Midwife and EMS-attended deliveries were rare, but when they occurred, had high rates of complications. Although an imperfect measure of patient SES, frequency of delivery was inversely related to patient income, and agencies that provide care in these communities should have focused training.

Eng MH and **Abbas AE** (2022). "Transcatheter mitral valve replacement in failed bioprosthetic surgical valves and surgical annuloplasty rings." *Current Cardiology Reports*. ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Purpose of Review: Repeat surgery for failed mitral valve prostheses and repairs are fraught with high rates of morbidity and mortality. Therefore, clinicians have evolved transcatheter technology as an alternative therapy. This review serves as an update as the field has moved out of the early learning curve of treating postsurgical mitral valve failures. Recent Findings: Mitral valve-in-valve procedures have higher rates of technical success and better in-hospital and 1-year mortality rates than mitral valve-in-ring cases. The higher rates of complications, including left ventricular outflow tract obstruction, paravalvular leak, valve embolization, and need for a 2nd valve, may explain these outcomes. Summary: Mitral valve-in-ring procedures have attenuated outcomes as compared to valve-in-valve. Clinicians should be cognizant of the nuanced complexities and the potential for suboptimal outcomes in using balloon-expandable valves for mitral valve-in-ring procedures.

Ezeokoli EU, Hilli R and **Wasvary HJ** (2022). "Index cost comparison of laparoscopic vs robotic surgery in colon and rectal cancer resection: A retrospective financial investigation of surgical methodology innovation at a single institution." *Techniques in Coloproctology*. ePub Ahead of Print.

[Full Text](#)

Department of Surgery

OUWB Medical Student Author

Background: Robotic assisted colorectal cancer resection (R-CR) has become increasingly commonplace in contrast to traditional laparoscopic cancer resection (L-CR). The aim of this study was to compare the total direct costs of R-CR to that of L-CR and to compare the groups with respect to costs related to LOS. Methods: Patients who underwent colon and/or rectal cancer resection via R-CR or L-CR instrumentation between January 1, 2015 and December 31 2018, at our institution, were evaluated and compared. Primary outcomes were overall cost, supply cost, operating time and cost, postoperative length of stay (LOS), and postoperative LOS cost. Secondary outcomes were readmission within 30 days and mortality during the surgery. Results: Two hundred forty R-CR (mean age 64.9 ± 12.4 years) and 258 L-CR (mean age 66.4 ± 15.5 years) patients met the inclusion criteria. There was no significant difference in overall

mean direct cost between R-CR and L-CR. The mean supply cost per case was significantly higher for R-CR vs L-CR (\$3789 vs \$2122, $p < 0.001$). Operating time was also higher for R-CR than L-CR (224 min vs 187 min, $p = 0.066$) but LOS was slightly lower (5.08 days vs 5.55 days, $p = 0.113$). Conclusions: Cost is the main obstacle to easy and widespread use of the platform at this junction, though new developments and competition could very well reduce costs. Supply cost was the main reason for increased costs with robotic resection.

Fendereski K, McCormick BJ, Keihani S, Hagedorn JC, Voelzke B, Selph JP, Figler BD, Johnsen NV, da Silva RD, Broghammer JA, Gupta S, Miller B, **Burks FN**, Eswara JR, Osterberg EC, Carney KJ, Erickson BA, Gretzer MB, Chung PH, Harris CR, Murphy GP, Rusilko P, Anderson KT, Shridharani A, Benson CR, Alwaal A, Blaschko SD, Breyer BN, McKibben M, IanSchwartz, Simhan J, Vanni AJ, Moses RA and Myers JB (2022). "The outcomes of pelvic fracture urethral injuries stratified by urethral injury severity: A prospective Multi-institutional Genitourinary Trauma Study (MiGUTS)." Urology. ePub Ahead of Print.
[Full Text](#)

Department of Urology

Objectives: To determine patient outcomes across a range of pelvic fracture urethral injury (PFUI) severity. PFUI is a devastating consequence of a pelvic fracture. No study has stratified PFUI outcomes based on severity of the urethral distraction injury. Methods: Adult male patients with blunt-trauma-related PFUI were followed prospectively for a minimum of six months at 27 US medical centers from 2015-2020. Patients underwent retrograde cystourethroscopy and retrograde urethrography to determine injury severity and were categorized into three groups: (1) major urethral distraction, (2) minor urethral distraction, and (3) partial urethral injury. Major distraction vs. minor distraction was determined by the ability to pass a cystoscope retrograde into the bladder. Simple statistics summarized differences between groups. Multi-variable analyses determined odds ratios for obstruction and urethroplasty controlling for urethral injury type, age, and Injury Severity Score. Results: There were 99 patients included, 72(72%) patients had major, 13(13%) had minor, and 14(14%) had partial urethral injuries. The rate of urethral obstruction differed in patients with major (95.8%), minor (84.6%), and partial injuries (50%) ($p < 0.001$). Urethroplasty was performed in 90% of major, 66.7% of minor, and 35.7% of partial injuries ($p < 0.001$). Conclusions: In PFUI, a spectrum of severity exists that influences outcomes. While major and minor distraction injuries are associated with a higher risk of developing urethral obstruction and need for urethroplasty, up to 50% of partial PFUI will result in obstruction, and as such need to be closely followed.

Fliegner M, Yaser JM, Stewart J, Nathan H, Likosky DS, Theurer PF, Clark MJ, Prager RL and Thompson MP (2022). "Area deprivation and Medicare spending for coronary artery bypass grafting: Insights from Michigan." Annals of Thoracic Surgery 114(4): 1291-1297.

[Full Text](#)

OUWB Medical Student Author

Francis JH, **Folberg R**, Abramson DH and Panarelli JF (2022). "Advanced congenital glaucoma with corneal staphyloma." Ophthalmology Glaucoma 5(5): 475.

[Request Form](#)

Department of Ophthalmology

Franklin BA (2022). "Compounders of the COVID crisis: The "perfect storm"." Baylor University Medical Center Proceedings 35(1): 133-136.

[Request Form](#)

Glazier JJ, Patiño-Velasquez S and Oviedo C (2022). "The pulmonary embolism response team: Rationale, operation, and outcomes." International Journal of Angiology. ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

The pulmonary embolism response team (PERT) is an institutionally based multidisciplinary team that is able to rapidly assess and provide treatment for patients with acute pulmonary embolism (PE). Intrinsic to the team's structure is a formal mechanism to execute a full range of medical, endovascular, and surgical therapies. In addition, the PERT provides appropriate multidisciplinary follow-up of patients. In the 10 years since the PERT was first introduced, it has gained acceptance in many centers in the United States and around the world. These PERTs have joined together to form an international association, called the PERT Consortium. The mission of this consortium is to advance the diagnosis, treatment, and outcomes of patients with PE. There is considerable evidence that the PERT model improves delivery and standardization of care of PE patients, particularly those patients with massive and submassive PE. However, it is not yet clear whether PERTs improve clinical outcomes. A large prospective database is currently being compiled by the PERT Consortium. Analysis of this database will likely further delineate the role of PERTs in the management of intermediate-to-high risk PE patients and, importantly, help determine in which PE patients PERT may improve clinical outcomes.

Gobbi RG, Videira LD, Dos Santos AA, Saruhashi MB, Lucarini BR, Fernandes RJR, Giglio PN, Pécora JR, Camanho GL and **Hinckel BB** (2022). "Anatomical risk factors for anterior cruciate ligament injury are not important as patellar instability risk factors in patients with acute knee injury." Journal of Knee Surgery 35(6): 676-683.

[Full Text](#)

Department of Orthopaedic Surgery

To compare in magnetic resonance imaging the anatomical risk factors for anterior cruciate ligament (ACL) injury and patellar dislocation among patients who suffered acute knee injury, 105 patients with acute knee injury resulting in 38 patellar dislocations (patella group), 35 ACL injuries (ACL group), and 32 meniscus or medial collateral ligament injuries (control group) were included. These groups were compared for risk factors for patellar dislocation (patellar height, trochlear dysplasia, and quadriceps angle of action) and for ACL injury (intercondylar width, posterior inclination of tibial plateaus, and depth of the medial plateau). Univariate analysis found statistically significant differences ($p < 0.05$) between the patella and ACL groups in patellar height (Caton-Deschamps [CD] 1.23 vs. 1.07), trochlear facet asymmetry (55 vs. 68%), PTTG (13.08 vs. 8.01 mm), and the patellar tip and trochlear groove (PTTG) angle (29.5 vs. 13.71 degrees). The patella group also differed from control in medial plateau inclination (4.8 vs. 1.87 degrees), patellar height (CD 1.23 vs 1.08), trochlear facet asymmetry (55 vs. 69%), lateral trochlear inclination (17.11 vs. 20.65 degrees), trochlear depth (4.1 vs. 6.05 mm), PTTG (13.08 vs. 9.85 mm), and the PTTG angle (29.5 vs. 17.88 degrees). The ACL and control groups were similar in all measures. Multivariate analysis found the following significant determinants between the Patella and Control groups: patellar height (CD index, odds ratio [OR]: 80.13, $p = 0.015$), trochlear anatomy (asymmetry of facets M/L, OR: 1.06, $p = 0.031$) and quadriceps action angle (PTTG angle, OR: 1.09, $p = 0.016$); between the ACL and control groups: PTTG angle (OR: 0.936, $p = 0.04$) and female gender (OR: 3.876, $p = 0.032$); and between the patella and ACL groups, the CD index (OR: 67.62, $p = 0.026$), asymmetry of the M/L facets (OR: 1.07, $p = 0.011$)

and PTTG angle (OR: 1.16, $p < 0.001$). In conclusion, in patients with acute knee injury, the anatomical factors patellar height, trochlear dysplasia, and quadriceps angle of action were related to the occurrence of patellar dislocation. None of the anatomical factors studied was related to the occurrence of anterior cruciate ligament injury.

Gormley M, **Dabrowski E**, Delgado MR, Tilton A, Christian A, Evans SH, Calvi-Gries F and Goldberg J (2022). "A phase IV, prospective, observational, multicenter study evaluating the effectiveness and safety of abobotulinumtoxin in pediatric lower limb spasticity (PLLS)." Toxicon 214: S22-S23.

[Request Form](#)

Department of Physical Medicine & Rehabilitation

Govindaraju VK, **Chao JT**, Duvall ER, **Baker NS**, **Fahey KM**, Lee R, **Williams GA** and **Stec LA** (2022). "Incidence of endogenous fungal endophthalmitis in screening dilated exams in patients with elevated beta-D-glucan levels versus positive fungal blood cultures." Clinical Ophthalmology 16: 2743-2750.

[Full Text](#)

OUWB Medical Student Author

Department of Ophthalmology

Purpose: Endogenous endophthalmitis is a severe intraocular infectious condition requiring rapid diagnosis and treatment. This study examines the incidence of fungal endophthalmitis in patients with elevated beta-D-glucan (BG) levels and those with positive blood culture and the utility of ophthalmology consultation in these patients. Methods: Single center retrospective consecutive cohort study was conducted on patients at Beaumont Health from 2016–2021 who either had positive fungal blood cultures or an elevated BG level. Results: A total of 147 patients were examined by the ophthalmology department where 30 patients had an elevated BG level and 100 patients had a positive fungal blood culture. Incidence of fungal endophthalmitis was 0% in the elevated BG group and 1.5% in the positive fungal culture group, corresponding to a relative risk ratio of 0.0 ($p = 0.31$). Conclusion: BG testing may be useful in diagnosing isolated cases outside the standard screening paradigm, however the data within this study support the conclusion that there is no compelling evidence at this time to add or use BG as a surrogate for endophthalmitis screening. Further studies are required to further elucidate the role of BG in the care of critically ill patients.

Govindaraju VK, **Trese MGJ** and **Faia LJ** (2022). "Ocular complications of acute worsening of nephrotic syndrome." Ophthalmic Surgery Lasers & Imaging Retina 53(7): 393-396.

[Request Form](#)

Department of Ophthalmology

This report presents the case of a man aged 45 years who came into the emergency department with acutely worsening vision during the course of 1 week. He was found to have acutely worsening nephrotic syndrome secondary to focal segmental glomerulosclerosis despite systemic immunosuppression. His ophthalmic examination revealed large nerve fiber layer hemorrhages in the posterior pole, significant macular edema, and areas of polygonal retinal whitening sparing the blood vessels, consistent with a diagnosis of Purtscher-like retinopathy. The patient was started on intravenous methylprednisolone followed by an oral taper of prednisone with improvement in his visual acuity and clinical findings 2 weeks later.

Goyal A, Frawley J, **Gappy R**, Sandoval S, Chen NW, Crowe R and **Swor R** (2022). "Prehospital ketamine use in pediatrics." Prehospital Emergency Care. ePub Ahead of Print.

[Request Form](#)

*OUWB Medical Student Author
Department of Emergency Medicine*

Introduction: Information regarding prehospital ketamine use in the pediatric population is limited as existing literature focuses primarily on critical care and air transport. Our objective was to describe patient characteristics among pediatric EMS patients who received ketamine. **Secondarily,** we assessed effectiveness, deviation from recommended dosing, and adverse outcomes of pediatric EMS patients who received ketamine. **Methods:** We conducted a retrospective data review of records from the ESO Data Collaborative for all 9-1-1 transports of pediatric patients (≤ 18 years of age) who received ketamine from 2019-2020. We categorized EMS primary impressions as a proxy for medication indication. We defined effectiveness as paramedic-identified clinical improvement, and pain relief as decrease in pain score ≥ 2 points between initial and final recording. Descriptive statistics were used to summarize clinical characteristics. Non-parametric Wilcoxon signed-rank test was used to assess change in pain score. **Results:** Out of 422,968 ground-ambulance pediatric patients, 1,291 received ketamine. They were predominately male (842, 65.2%), teenagers (median age 16, IQR: 13-17), Caucasian (810, 62.7%), and from urban areas (1,041, 80.6%). The most common EMS impressions were related to injuries (810, 62.7%) and behavior disorders (281, 21.8%). Only 980/1,291 (75.9%) had weights and identifiable routes recorded. Most patients (960, 74.4%) received single doses of ketamine, with EMS clinicians reporting improvement in 855 (89.1%) of 960 patients. Among non-behavioral emergency patients, 727/1,010 (72.0%) had pain scores recorded. Pain scores decreased significantly from a median of 8 (IQR: 4-10) to 2 (IQR: 0-6) ($p < 0.001$) with 59% (429) of 727 patients reporting pain score reductions of 2 or more points. Desaturation ($<90\%$ SpO₂) events were noted to be minimal (1.8%). A small number (28, 2.2%) received positive pressure ventilation without advanced airway placement. No prehospital deaths were documented. **Conclusion:** In this large review of pediatric prehospital ketamine use, ketamine was primarily used for analgesia, but was frequently used for other indications. Most patients were observed to improve after ketamine use, with most injured patients reporting decreases in pain scores. We observed few significant adverse events related to ketamine use in this population.

Guina J, Barlow S and Gutierrez D (2022). "Bipolar I disorder exacerbation following COVID-19 vaccination." *Innovations in Clinical Neuroscience* 19(7-9): 9-11.

[Full Text](#)

Department of Psychiatry

We present the cases of a 60-year-old female patient and 40-year-old male patient who experienced exacerbations of previously well-controlled symptoms of bipolar I disorder (BD1) after receiving COVID-19 vaccines, despite being stable for years on the same medications. The first patient experienced worsened depression, mania, and psychosis that improved with an increase in risperidone. The second patient experienced depression, mania, psychosis, and suicidal ideation that resulted in hospitalization. Prior to hospitalization, he took lamotrigine and bupropion, the latter of which was changed to aripiprazole in hospital. We reviewed current literature on inflammation in mental disorders, vaccination-related inflammatory changes, and the type of inflammation induced by COVID-19 vaccines. Inflammation is a component of psychiatric disorders, and the inflammatory response induced by vaccines might potentiate acute mental health exacerbations, necessitating treatment changes. However, this case series should not be used to justify recommendations against vaccination without larger, well-designed studies. At this time, the known benefits of vaccination outweigh these unknown risks, especially because individuals with serious mental illness are more likely to die from COVID-19 than the general population.

Guina J, Dornfeld B and Pinals DA (2022). "A 20-year follow-up survey of police officers' experience with *Tarasoff* warnings: How law enforcement reacts to clinicians' duty to protect." *Behavioral Sciences & the Law* 40(4): 505-513.

[Full Text](#)

Department of Psychiatry

Guina J, Hernandez C, Witherell J, Cowan A, Dixon D, King I and Gentile JP (2022). "Neurodevelopmental disorders, criminality, and criminal responsibility." *Journal of the American Academy of Psychiatry and the Law*. ePub Ahead of Print.

[Full Text](#)

Department of Psychiatry

Although individuals with neurodevelopmental disorders (ND), such as intellectual disability (ID) and autism, are overrepresented in the criminal justice system, most psychiatry training is limited regarding NDs, and forensic psychiatry training tends to focus on psychotic and mood disorders. This article explores the complex interactions between NDs and criminality, including direct etiological explanations and potential mediating variables (e.g., trauma), to address common training gaps. We compare and contrast current laws relevant to assessing NDs in criminal responsibility evaluations. Not guilty by reason of insanity (NGRI) criteria vary by jurisdiction, with some specifying ID as one possible insanity defense prerequisite while most jurisdictions are nonspecific. NDs in the absence of psychosis or mania often involve impaired cognition (e.g., comprehension, reasoning, social cognition) and behavioral dysregulation. This article provides potential scenarios by which those with NDs might be competent to stand trial but qualify for one or more NGRI prongs. Suggestions for assessment methods (including for malingering) are addressed for this unique population.

Gupta R, John J, Gupta M, Haq M, Peshel E, Boudiab E, Shaheen K and Chaiyasate K (2022). "A cross-sectional analysis of breast reconstruction with fat grafting content on TikTok." *Archives of Plastic Surgery* 49(5): 614-616.

[Full Text](#)

OUWB Medical Student Author

Department of Surgery

As of November 2021, TikTok has one billion monthly active users and is recognized as the most engaging social media platform. TikTok has seen a surge in users and content creators, ranging from athletes to medical professionals. In the past year, content creators have utilized the app to advocate for social reforms, education, and other uses that were not previously considered. Breast cancer is the most commonly diagnosed cancer in women, with an expected 281,550 new cases of invasive breast cancer in 2021. As more individuals with breast cancer choose to undergo resection, the demand for autologous fat grafting in breast reconstruction has increased due to the natural look and feel of breast tissue. The purpose of this article is to analyze content related to breast reconstruction with fat grafting found on TikTok and recommend methods to improve patient education, care, and outcomes. We searched TikTok on November 1, 2021, for videos using the phrase "breast reconstruction with fat grafting." The top 200 videos retrieved from the TikTok search algorithm were analyzed, and all commentaries, duplicates, and nonrelevant videos were removed. Video characteristics were collected, and two independent reviewers generated a DISCERN score A total of 131 videos were included in the study. They were found to have a combined 1,871,980 likes, 41,113 comments, and 58,662 shares. The videos had an average DISCERN score of 2.16. Content creators had an overall low

DISCERN score in items involving the use of references, disclosure of risks for not obtaining treatment, and support for shared decision-making. When stratified, the DISCERN score was higher for videos created by physicians (DISCERN average 2.48) than for videos created by nonphysicians (DISCERN average 1.99; $p < 0.001$). Content creators can improve the quality of their videos by disclosing treatment risks, benefits and risks, discussing risks for not obtaining treatment, and advocating for shared decision-making. Furthermore, including citations and academic references may offer increased credibility and promote evidence practice. This article is limited by the variability seen on the TikTok platform that is influenced by algorithmic trends. The top 200 search results vary, making each compilation of videos selected for analysis unique. Furthermore, although DISCERN is a reliable source to assess patient information, it has not been tested for its reliability with videos such as on TikTok. Despite TikTok being developed as a social media platform, it has shown to be a medium for patient outreach and an educational tool.

Gupta R, John J, Gupta R, Hart J, DeSano J, Sachanandani NS and Chaiyasate K (2022). "Simultaneous contralateral autologous breast augmentation during unilateral breast reconstruction utilizing deep inferior epigastric flaps." *Plastic Reconstructive Surgery Global Open* 10(9): e4498.

[Full Text](#)

OUWB Medical Student Author

Department of Surgery

It is predicted that 281,550 new cases of invasive breast cancer and 49,290 new cases of ductal carcinoma in situ will be diagnosed this year. In this study, we will detail our experience with simultaneous contralateral autologous breast augmentation during unilateral breast reconstruction utilizing bilateral deep inferior epigastric perforator (DIEP) flaps. Methods: A retrospective analysis of patients who underwent simultaneous contralateral autologous breast augmentation during unilateral breast reconstruction utilizing bilateral DIEP flaps by the senior surgeons at Beaumont Health Systems, Royal Oak, was conducted. Demographic data, operative details, complications, medical comorbidities, and patient outcomes were retrospectively analyzed. Results: Seven patients who met the inclusion criteria were identified. One patient underwent immediate reconstruction with DIEP flaps, one patient had a history of lumpectomy and underwent delayed partial breast reconstruction, three patients had delayed unilateral DIEP breast reconstruction with contralateral breast augmentation, and two patients had previous augmentations that were revised. All patients examined in this review tolerated the procedures well and had clinically viable flaps along with superior aesthetic outcomes. Conclusions: This technique can be applied to various clinical conditions, including immediate breast reconstruction, delayed breast reconstruction, and salvage for failed implant-based reconstruction, leading to optimal patient outcomes and satisfaction. Unilateral breast reconstruction with simultaneous contralateral autologous breast augmentation utilizing bilateral DIEP flaps is a surgical technique that more plastic surgeons should utilize.

Gupta R, John J, Hart J and Chaiyasate K (2022). "Medial canthus reconstruction with the paramedian forehead flap." *Plastic Reconstructive Surgery Global Open* 10(7): e4419.

[Full Text](#)

OUWB Medical Student Author

Department of Surgery

Background: The medial canthus represents the medial confluence of the upper and lower eyelid margins and plays an integral role in the lacrimal duct system. Various flaps have been utilized for the reconstruction of the lower eyelid in the medial canthal region. Our institution

primarily utilizes the paramedian forehead flap for the reconstruction of medial canthus defects. Our study looked to evaluate the work of a single plastic surgeon and identify their postoperative outcomes. Methods: A retrospective chart review was conducted at Beaumont Health System, Royal Oak, for patients who underwent medial canthal repair by the lead surgeon between the years 2014 and 2018. Demographic data, operative details, complications, medical comorbidities, and patient outcomes were retrospectively gathered and analyzed. Results: A total of five patients were isolated. Patients underwent paramedian forehead flap medial canthal repair by the lead surgeon and were found to tolerate the procedure well. All patients had clinically viable flaps with aesthetically pleasing results. Conclusions: Utilization of the paramedian forehead flap leads to successful medial canthal repair with adequate coverage. Although the paramedian forehead flap requires three stages to complete, the procedure leaves patients with aesthetically pleasing results. In addition, the paramedian forehead flap has limited cases of ectropion. With the right expertise and patient population, the paramedian forehead flap can be highly successful in the repair of medial canthal defects.

Gupta R, John J, Ranganathan N, Stepanian R, Gupta M, Hart J, Nossoni F, Shaheen K, Folbe A and Chaiyasate K (2022). "Outcomes of closed versus open rhinoplasty: A systematic review." Archives of Plastic Surgery 49(5): 569-579.

[Full Text](#)

*OUWB Medical Student Author
Department of Surgery*

Open and closed rhinoplasty are two main approaches to perform nasal modifications. According to current literature, there is no current consensus among plastic surgeons and otolaryngologists on which technique is preferred in terms of aesthetic result, complications, and patient satisfaction. This study uses published research to determine whether open or closed rhinoplasty leads to superior patient outcomes. Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines for systematic reviews were followed and a literature search was conducted in four databases based on our search strategy. Articles were then imported into COVIDENCE where they underwent primary screening and full-text review. Twenty articles were selected in this study after 243 articles were screened. There were 4 case series, 12 retrospective cohort studies, 1 prospective cohort study, 1 case-control, and 2 outcomes research. There were three cosmetic studies, eight functional studies, and nine studies that included both cosmetic and functional components. Sixteen studies utilized both open and closed rhinoplasty and four utilized open rhinoplasty. Both techniques demonstrated high patient and provider satisfaction and no advantage was found between techniques. Based on available studies, we cannot conclude if there is a preference between open or closed rhinoplasty in terms of which technique leads to better patient outcomes. Several studies determined that open rhinoplasty and closed rhinoplasty leads to comparative patient satisfaction. To make outcome reporting more reliable and uniform among studies, authors should look to utilize the Nasal Obstruction and Septoplasty Effectiveness scale and the Rhinoplasty Outcome Evaluation.

Haines DE, Kong MH, Ruppertsberg P, Haeusser P, Avitall B, Torok TS and Verma A (2022). "Electrographic flow mapping for atrial fibrillation: Theoretical basis and preliminary observations." Journal of Interventional Cardiac Electrophysiology. ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Ablation strategies remain poorly defined for persistent atrial fibrillation (AF) patients with

recurrence despite intact pulmonary vein isolation (PVI). As the ability to perform durable PVI improves, the need for advanced mapping to identify extra-PV sources of AF becomes increasingly evident. Multiple mapping technologies attempt to localize these self-sustained triggers and/or drivers responsible for initiating and/or maintaining AF; however, current approaches suffer from technical limitations. Electrographic flow (EGF) mapping is a novel mapping method based on well-established principles of optical flow and fluid dynamics. It enables the full spatiotemporal reconstruction of organized wavefront propagation within the otherwise chaotic and disorganized electrical conduction of AF. Given the novelty of EGF mapping and relative unfamiliarity of most clinical electrophysiologists with the mathematical principles powering the EGF algorithm, this paper provides an in-depth explanation of the technical/mathematical foundations of EGF mapping and demonstrates clinical applications of EGF mapping data and analyses. Graphical abstract: Starting with a 64-electrode basket catheter, unipolar EGMs are recorded and processed using an algorithm to visualize the electrographic flow and highlight the location of high prevalence AF “source” activity. The AF sources are agnostic to the specific mechanisms of source signal generation.

Hammaker AC, Dodwad SJM, Salyer CE, Adams SD, Foote DC, **Ivascu FA**, Kader S, Abelson JS, Al Yafi M, Sutton JM, Smith S, Postlewait LM, Stopenski SJ, Nahmias JT, Harvey J, Farr D, Callahan ZM, Marks JA, Elsaadi A, Campbell SJ, Stahl CC, Hanseman DJ, Patel P, Woeste MR, Martin RCG, Patel JA, Newcomb MR, Greenwell K, Meister KM, Etheridge JC, Cho NL, Thrush CR, Kimbrough MK, Nasim BW, Willis RE, George BC, Quillin RC and Cortez AR (2022). "A multi-institutional study from the US ROPE Consortium examining factors associated with directly entering practice upon residency graduation." *Surgery* 172(3): 906-912.

[Full Text](#)

Department of Surgery

Background: There is concern regarding the competency of today's general surgery graduates as a large proportion defer independent practice in favor of additional fellowship training. Little is known about the graduates who directly enter general surgery practice and if their operative experiences during residency differ from graduates who pursue fellowship. **Methods:** Nineteen Accreditation Council for Graduate Medical Education–accredited general surgery programs from the US Resident Operative Experience Consortium were included. Demographics, career choice, and case logs from graduates between 2010 to 2020 were analyzed. **Results:** There were 1,264 general surgery residents who graduated over the 11-year period. A total of 248 (19.6%) went directly into practice and 1,016 (80.4%) pursued fellowship. Graduates directly entering practice were more likely to be a high-volume resident (43.1% vs 30.5%, $P < .01$) and graduate from a high-volume program (49.2% vs 33.0%, $P < .01$). Direct-to-practice graduates performed 53 more cases compared with fellowship-bound graduates (1,203 vs 1,150, $P < .01$). On multivariable analysis, entering directly into practice was positively associated with total surgeon chief case volume (odds ratio = 1.47, 95% confidence interval 1.18–1.84, $P < .01$) and graduating from a US medical school (odds ratio = 2.54, 95% confidence interval 1.45–4.44, $P < .01$) while negatively associated with completing a dedicated research experience (odds ratio = 0.31, 95% confidence interval 0.22–0.45, $P < .01$). **Conclusion:** This is the first multi-institutional study exploring resident operative experience and career choice. These data suggest residents who desire immediate practice can tailor their experience with less research time and increased operative volume. These data may be helpful for programs when designing their experience for residents with different career goals.

Harnett NG, Finegold KE, Lebois LAM, van Rooij SJH, Ely TD, Murty VP, Jovanovic T, Bruce SE, House SL,

Beaudoin FL, An XM, Zeng DL, Neylan TC, Clifford GD, Linnstaedt SD, Germine LT, Bollen KA, Rauch SL, Haran JP, Storrow AB, Lewandowski C, Musey PI, Hendry PL, Sheikh S, Jones CW, Panches BE, Kurz MC, **Swor RA**, Hudak LA, Pascual JL, Seamon MJ, Harris E, Chang AM, Pearson C, Peak DA, Domeier RM, Rathlev NK, O'Neil BJ, Sergot P, Sanchez LD, Miller MW, Pietrzak RH, Joormann J, Barch DM, Pizzagalli DA, Sheridan JF, Harte SE, Elliott JM, Kessler RC, Koenen KC, McLean SA, Nickerson LD, Ressler KJ and Stevens JS (2022). "Structural covariance of the ventral visual stream predicts posttraumatic intrusion and nightmare symptoms: A multivariate data fusion analysis." *Translational Psychiatry* 12(1): 321.

[Full Text](#)

Department of Emergency Medicine

Visual components of trauma memories are often vividly re-experienced by survivors with deleterious consequences for normal function. Neuroimaging research on trauma has primarily focused on threat-processing circuitry as core to trauma-related dysfunction. Conversely, limited attention has been given to visual circuitry which may be particularly relevant to posttraumatic stress disorder (PTSD). Prior work suggests that the ventral visual stream is directly related to the cognitive and affective disturbances observed in PTSD and may be predictive of later symptom expression. The present study used multimodal magnetic resonance imaging data (n = 278) collected two weeks after trauma exposure from the AURORA study, a longitudinal, multisite investigation of adverse posttraumatic neuropsychiatric sequelae. Indices of gray and white matter were combined using data fusion to identify a structural covariance network (SCN) of the ventral visual stream 2 weeks after trauma. Participant's loadings on the SCN were positively associated with both intrusion symptoms and intensity of nightmares. Further, SCN loadings moderated connectivity between a previously observed amygdala-hippocampal functional covariance network and the inferior temporal gyrus. Follow-up MRI data at 6 months showed an inverse relationship between SCN loadings and negative alterations in cognition in mood. Further, individuals who showed decreased strength of the SCN between 2 weeks and 6 months had generally higher PTSD symptom severity over time. The present findings highlight a role for structural integrity of the ventral visual stream in the development of PTSD. The ventral visual stream may be particularly important for the consolidation or retrieval of trauma memories and may contribute to efficient reactivation of visual components of the trauma memory, thereby exacerbating PTSD symptoms. Potentially chronic engagement of the network may lead to reduced structural integrity which becomes a risk factor for lasting PTSD symptoms.

Hegde B, Garcia E, Hu A, Raval M, Takirambudde S, Wakeman D, Lewit R, Gosain A, Parrado RH, Cina RA, Stephenson K, Dassinger MS, Zhang D, Mustafa MM, Koo D, Lipskar AM, Scheidler K, Van Arendonk KJ, Berg P, Gonzalez R, Scheese D, Haynes J, Mina A, Zamora IJ, Lopez ME, Mehl SC, Gilliam E, Lofberg K, Spencer B, Kulaylat AN, Gulack BC, Johnson M, Laskovy M, **Brahmamdham P**, Shimomura A, Blanch T, Tsao K and Slater BJ (2022). "Management of pediatric appendicitis during the COVID-19 pandemic: A nationwide multicenter cohort study." *Journal of Pediatric Surgery*. ePub Ahead of Print.

[Full Text](#)

Department of Pediatrics

Background: The COVID-19 pandemic has impacted timely access to care for children, including patients with appendicitis. This study aimed to evaluate the effect of the COVID-19 pandemic on management of appendicitis and patient outcomes. Methods: A multicenter retrospective study was performed including 19 children's hospitals from April 2019-October 2020 of children (age≤18 years) diagnosed with appendicitis. Groups were defined by each hospital's city/state stay-at-home orders (SAHO), designating patients as Pre-COVID (Pre-SAHO) or COVID (Post-SAHO). Demographic, treatment, and outcome data were obtained, and univariate and multivariable analysis was performed. Results: Of 6,014 patients, 2,413 (40.1%) presented

during the COVID-19 pandemic. More patients were managed non-operatively during the COVID-19 pandemic compared to before the pandemic (147 (6.1%) vs 144 (4.0%), $p < 0.001$). Despite this change, there was no difference in the proportion of complicated appendicitis between groups (1,247 (34.6%) vs 849 (35.2%), $p = 0.12$). COVID era non-operative patients received fewer additional procedures, including interventional radiology (IR) drain placements, compared to pre-COVID non-operative patients (29 (19.7%) vs 69 (47.9%), $p < 0.001$). On adjusted analysis, factors associated with increased odds of receiving non-operative management included: increasing duration of symptoms (OR=1.01, 95% CI: 1.01–1.012), African American race (OR=2.4, 95% CI: 1.3–4.6), and testing positive for COVID-19 (OR=10.8, 95% CI: 5.4–21.6). Conclusion: Non-operative management of appendicitis increased during the COVID-19 pandemic. Additionally, fewer COVID era cases required IR procedures. These changes in the management of pediatric appendicitis during the COVID pandemic demonstrates the potential for future utilization of non-operative management.

Herr DJ, Hochstedler KA, Yin H, Dess RT, Matuszak M, Grubb M, Dominello M, Movsas B, Kestin LL, Bergsma D, Dragovic AF, **Grills IS**, Hayman JA, Paximadis P, Schipper M and Jolly S (2022). "Effect of education and standardization of cardiac dose constraints on heart dose in patients with lung cancer receiving definitive radiation therapy across a statewide consortium." *Practical Radiation Oncology* 12(5): e376-e381.

[Request Form](#)

Department of Radiation Oncology

Purpose: Cardiac radiation exposure is associated with an increased rate of adverse cardiac events in patients receiving radiation therapy for locally advanced non-small cell lung carcinoma (NSCLC). Previous analysis of practice patterns within the Michigan Radiation Oncology Quality Consortium (MROQC) revealed 1 in 4 patients received a mean heart dose >20 Gy and significant heterogeneity existed among treatment centers in using cardiac dose constraints. The purpose of this study is to analyze the effect of education and initiation of standardized cardiac dose constraints on heart dose across a statewide consortium. Methods and Materials: From 2012 to 2020, 1681 patients from 27 academic and community centers who received radiation therapy for locally advanced NSCLC were included in this analysis. Dosimetric endpoints including mean heart dose (MHD), mean lung dose, and mean esophagus dose were calculated using data from dose-volume histograms. These dose metrics were grouped by year of treatment initiation for all patients. Education regarding data for cardiac dose constraints first occurred in small lung cancer working group meetings and then consortium-wide starting in 2016. In 2018, a quality metric requiring mean heart dose <20 Gy while maintaining dose coverage (D95) to the target was implemented. Dose metrics were compared before (2012-2016) versus after (2017-2020) initiation of interventions targeting cardiac constraints. Statistical analysis was performed using the Wilcoxon rank sum test. Results: After education and implementation of the heart dose performance metric, mean MHD declined from an average of 12.2 Gy preintervention to 10.4 Gy postintervention ($P < .0001$), and the percentage of patients receiving MHD >20 Gy was reduced from 21.1% to 10.3% ($P < .0001$). Mean lung dose and mean esophagus dose did not increase, and target coverage remained unchanged. Conclusions: Education and implementation of a standardized cardiac dose quality measure across a statewide consortium was associated with a reduction of mean heart dose in patients receiving radiation therapy for locally advanced NSCLC. These dose reductions were achieved without sacrificing target coverage, increasing mean lung dose, or increasing mean esophagus dose. Analysis of the clinical ramifications of the reduction in cardiac doses is ongoing.

Herrmann HC, Pibarot P, Wu C, Hahn RT, Tang GHL, **Abbas AE**, Playford D, Ruel M, Jilaihawi H, Sathananthan J, Wood DA, De Paulis R, Bax JJ, Rodes-Cabau J, Cameron DE, Chen T, Del Nido PJ, Dweck MR, Kaneko T, Latib A, Moat N, Modine T, Popma JJ, Raben J, Smith RL, Tchetché D, Thomas MR, Vincent F, Yoganathan A, Zuckerman B, Mack MJ and Leon MB (2022). "Bioprosthetic aortic valve hemodynamics: Definitions, outcomes, and evidence gaps: JACC state-of-the-art review." Journal of the American College of Cardiology 80(5): 527-544.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

A virtual workshop was organized by the Heart Valve Collaboratory to identify areas of expert consensus, areas of disagreement, and evidence gaps related to bioprosthetic aortic valve hemodynamics. Impaired functional performance of bioprosthetic aortic valve replacement is associated with adverse patient outcomes; however, this assessment is complicated by the lack of standardization for labelling, definitions, and measurement techniques, both after surgical and transcatheter valve replacement. Echocardiography remains the standard assessment methodology because of its ease of performance, widespread availability, ability to do serial measurements over time, and correlation with outcomes. Management of a high gradient after replacement requires integration of the patient's clinical status, physical examination, and multimodality imaging in addition to shared patient decisions regarding treatment options. Future priorities that are underway include efforts to standardize prosthesis sizing and labelling for both surgical and transcatheter valves as well as trials to characterize the consequences of adverse hemodynamics.

Hijazi A, Hasan A, Pearl A, **Memon R**, Debeau M, Roldan M, Awad ME, Abdul-Kabir E and Saleh KJ (2022). "Genetic polymorphisms associated with perioperative joint infection following total joint arthroplasty: A systematic review and meta-analysis." Antibiotics 11(9): 1187.

[Full Text](#)

OUWB Medical Student Author

The number of orthopedic procedures, especially prosthesis implantation, continues to increase annually, making it imperative to understand the risks of perioperative complications. These risks include a variety of patient-specific factors, including genetic profiles. This review assessed the current literature for associations between patient-specific genetic risk factors and perioperative infection. The PRISMA guidelines were used to conduct a literature review using the PubMed and Cochrane databases. Following title and abstract review and full-text screening, eight articles remained to be reviewed—all of which compared single nucleotide polymorphisms (SNPs) to periprosthetic joint infection (PJI) in total joint arthroplasty (TJA). The following cytokine-related genes were found to have polymorphisms associated with PJI: TNF α ($p < 0.006$), IL-6 ($p < 0.035$), GCSF3R ($p < 0.02$), IL-1 RN-VNTR ($p = 0.002$), and IL-1B ($p = 0.037$). Protein- and enzyme-related genes that were found to be associated with PJI included: MBL ($p < 0.01$, $p < 0.05$) and MBL2 ($p < 0.01$, $p < 0.016$). The only receptor-related gene found to be associated with PJI was VDR ($p < 0.007$, $p < 0.028$). This review compiled a variety of genetic polymorphisms that were associated with periprosthetic joint infections. However, the power of these studies is low. More research must be conducted to further understand the genetic risk factors for this serious outcome.

Hinckel BB, Baumann CA, Arendt EA, Gobbi RG, Garrone AJ, Voss E, Fithian D, Khan N and Sherman SL (2022). "Quadriceps tendon lengthening for obligatory (habitual) patellar dislocation in flexion." Arthroscopy Techniques 11(9): e1589-e1595.

[Full Text](#)

Department of Orthopaedic Surgery

Obligatory patella dislocation in flexion is an uncommon form of patellar instability, where the patella is located in extension and dislocates with every episode of knee flexion. This results in dramatically altered patellofemoral kinematics and can be extremely debilitating due to extensor strength deficits and lack of knee confidence in flexion. Concomitant pathology, which is often seen, includes a tight lateral retinaculum and a shortened extensor mechanism.

Lengthening the extensor mechanism is a critical part of successful patellar stabilization, and has not been well-reported. Herein, we present a technique of quadriceps lengthening for the treatment of obligatory patellar dislocation.

Ho TC, Maamari RN, Kossler AL, Sears CM, Freitag SK, Reshef ER, Shinder R, Rootman DB, Diniz SB, **Kahana A, Schlachter D**, Do TH, Kally P, Turner S, Mokhtarzadeh A, Harrison AR, Hwang CJ, Kim HJ, Avila SA, Thomas DA, Magazin M, Wester ST, Lee WW, Clauss KD, Holds JB, Sniegowski M, Compton CJ, Briggs C, Malik AI, Lucarelli MJ, Burkat CN, Patel LG and Couch SM (2022). "Outcomes of patients with thyroid eye disease partially treated with teprotumumab." Ophthalmic Plastic and Reconstructive Surgery. ePub Ahead of Print.

[Full Text](#)

Department of Ophthalmology

Purpose: In response to the coronavirus (COVID-19) pandemic, teprotumumab production was temporarily halted with resources diverted toward vaccine production. Many patients who initiated treatment with teprotumumab for thyroid eye disease were forced to deviate from the standard protocol. This study investigates the response of teprotumumab when patients receive fewer than the standard 8-dose regimen. Methods: This observational cross-sectional cohort study included patients from 15 institutions with active or minimal to no clinical activity thyroid eye disease treated with the standard teprotumumab infusion protocol. Patients were included if they had completed at least 1 teprotumumab infusion and had not yet completed all 8 planned infusions. Data were collected before teprotumumab initiation, within 3 weeks of last dose before interruption, and at the visit before teprotumumab reinitiation. The primary outcome measure was reduction in proptosis more than 2 mm. Secondary outcome measures included change in clinical activity score (CAS), extraocular motility restriction, margin reflex distance-1 (MRD1), and reported adverse events. Results: The study included 74 patients. Mean age was 57.8 years, and 77% were female. There were 62 active and 12 minimal to no clinical activity patients. Patients completed an average of 4.2 teprotumumab infusions before interruption. A significant mean reduction in proptosis (-2.9 mm in active and -2.8 mm in minimal to no clinical activity patients, $P < 0.01$) was noted and maintained during interruption. For active patients, a 3.4-point reduction in CAS ($P < 0.01$) and reduction in ocular motility restriction ($P < 0.01$) were maintained during interruption. Conclusions: Patients partially treated with teprotumumab achieve significant reduction in proptosis, CAS, and extraocular muscle restriction and maintain these improvements through the period of interruption.

Hussein IH, Zalikhah AK, Crespi Z, Tuluca A, **Arapovic AE** and El-Othmani MM (2022). "The impact of morbid obesity on in-hospital outcomes after revision total hip arthroplasty: An analysis of the national inpatient sample." Journal of the American Academy of Orthopaedic Surgeons. Global Research & Reviews 6(8): e22.00023.

[Full Text](#)

Department of Foundational Medical Studies (OU)

OUWB Medical Student Author

Introduction: There remain limited data on the effect of obesity on in-hospital outcomes after

revision total hip arthroplasty (rTHA). Methods: Discharge data from the National Inpatient Sample were used to identify patients undergoing rTHA from 2006 to 2015. Propensity score analysis was done to analyze the effects of obesity and morbid obesity on in-hospital economic and complication outcomes after rTHA. Results: The estimated 460,297 rTHAs were done during the study period. Obese patients were more likely to suffer from any complication than not obese patients (41.44% versus 39.41%, $P = 0.0085$), and morbidly obese patients were more likely to suffer from any complication than obese patients (47.22% versus 41.44%, $P < 0.0001$). Obesity was associated with increased risk of postoperative anemia compared with not obese patients, while morbid obesity was associated with increased risk of postoperative anemia, hematoma/seroma, wound dehiscence, and postoperative infection ($P < 0.05$). Morbidly obese patients also had a significantly greater average length of stay (6.40 days) than obese (5.23 days) and not obese (5.37 days) patients ($P < 0.0001$). Discussion: Although both obesity and morbid obesity are associated with higher risk of in-hospital postoperative complications after rTHA, morbid obesity is a larger risk factor and is associated with a longer length of stay.

Iannaccone M, Franchin L, **Hanson I**, Boccuzzi G, Basir M, Truesdell A and O'Neill W (2022). "TCT-66 door to impella placement in acute coronary syndrome complicated by cardiogenic shock: An updated meta-analysis." Journal of the American College of Cardiology 80(12): B27-B27.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Iannaccone M, Franchin L, **Hanson ID**, Boccuzzi G, Basir MB, Truesdell AG and O'Neill W (2022). "Timing of impella placement in PCI for acute myocardial infarction complicated by cardiogenic shock: An updated meta-analysis." International Journal of Cardiology 362: 47-54.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Introduction: The timing of hemodynamic support in acute myocardial infarction complicated by cardiogenic shock (AMICS) has yet to be defined. The aim of this meta-analysis was to evaluate the impact of timing of Impella initiation on early and midterm mortality. Methods: A systematic literature review and meta-analysis was conducted using PubMed and Cochrane databases. All studies reporting short-term mortality rates and timing of Impella placement in AMICS were included. Meta-regression analysis and sensitivity analysis were performed on the primary endpoint, short-term mortality (≤ 30 days), and secondary endpoints (midterm mortality, device-related bleeding, and limb ischemia). Results: Of 1289 studies identified, 13 studies (6810 patients; 2970 patients identified as receiving Impella pre-PCI and 3840 patients receiving Impella during/post-PCI) were included in this analysis. Median age was 63.8 years (IQR 63–65.7); 76% of patients were male, and a high prevalence of cardiovascular risk factors was noted across the entire population. Short-term mortality was significantly reduced in those receiving pre-PCI vs. during/post-PCI Impella support (37.2% vs 53.6%, RR 0.7; CI 0.56–0.88). Midterm mortality was also lower in the pre-PCI Impella group (47.9% vs 73%, RR 0.81; CI 0.68–0.97). The rate of device-related bleeding (RR 1.05; CI 0.47–2.33) and limb ischemia (RR 1.6; CI 0.63–2.15) were similar between the two groups. Conclusion: This analysis suggests that Impella placement prior to PCI in AMICS may have a positive impact on short- and midterm mortality compared with post-PCI, with similar safety outcomes. Due to the observational nature of the included studies, further studies are needed to confirm this hypothesis (CRD42022300372).

Ionescu F, Anusim N, Zimmer M and **Jaiyesimi I** (2022). "Venous thromboembolism prophylaxis in hospitalized sickle cell disease and sickle cell trait patients." European Journal of Haematology 109(3):

282-288.

[Full Text](#)

Department of Internal Medicine/Hematology-Oncology

Introduction: Sickle trait (Hb SA) or sickle disease (Hb SS) carries increased risk of venous thromboembolism (VTE). Hb SS patients are young and lack common comorbid conditions that qualify them for VTE prophylaxis (VTEP). Methods: Retrospective, multicenter analysis of Hb SS/Hb SA adult patients between January 2013 and December 2018. Results: There were 803 Hb SA (525 patients) and 1020 Hb SS admissions (262 patients). VTEP use was similar between Hb SA and controls (42% vs. 46%; p-value =.06) and Hb SS and controls (45% vs. 42%; p-value =.13). Hb SS/Hb SA patients more frequently received more than half of prescribed doses of VTEP. In multivariate analysis, increasing age and longer hospitalizations were positive predictors. Odds of VTEP use varied with treatment site for Hb SS patients, whereas comorbid conditions, admission hemoglobin and platelet count were not predictive. By contrast, in Hb SA patients, comorbid conditions, higher admission hemoglobin, and higher admission platelet counts raised the odds of VTEP being offered. Conclusions: VTEP is underused in Hb SS/Hb SA patients. There may be a trend toward offering more VTEP in Hb SS disease, but not in Hb SA patients, where VTEP prescribing is driven by comorbid conditions rather than genotype. Patient compliance does not appear to play a major role, but intercenter variability suggests provider education may improve VTEP use.

Issa CJ, Svientek SR, Dehdashtian A, Cederna PS and Kemp SWP (2022). "Pathophysiological and neuroplastic changes in postamputation and neuropathic pain: Review of the literature." Plastic Reconstructive Surgery Global Open 10(9): e4549.

[Full Text](#)

OUWB Medical Student Author

Despite advancements in surgical and rehabilitation strategies, extremity amputations are frequently associated with disability, phantom limb sensations, and chronic pain. Investigation into potential treatment modalities has focused on the pathophysiological changes in both the peripheral and central nervous systems to better understand the underlying mechanism in the development of chronic pain in persons with amputations. Methods: Presented in this article is a discussion outlining the physiological changes that occur in the peripheral and central nervous systems following amputation. In this review, the authors examine the molecular and neuroplastic changes occurring in the nervous system, as well as the state-of-the-art treatment to help reduce the development of postamputation pain. Results: This review summarizes the current literature regarding neurological changes following amputation. Development of both central sensitization and neuronal remodeling in the spinal cord and cerebral cortex allows for the development of neuropathic and phantom limb pain postamputation. Recently developed treatments targeting these pathophysiological changes have enabled a reduction in the severity of pain; however, complete resolution remains elusive. Conclusions: Changes in the peripheral and central nervous systems following amputation should not be viewed as separate pathologies, but rather two interdependent mechanisms that underlie the development of pathological pain. A better understanding of the physiological changes following amputation will allow for improvements in therapeutic treatments to minimize pathological pain caused by amputation.

Jaiyesimi I, Temin S and Singh N (2022). "Therapy for stage IV non-small-cell lung cancer with and without driver alterations: ASCO living guidelines Q and A." JCO Oncology Practice. ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine/Hematology-Oncology

Jinna S and **Khandhar PB** (2022). "Thrombocytopenia." [StatPearls](#).

[Full Text](#)

Department of Pediatrics

A platelet count that falls below the lower limit of normal, i.e., 150000/microliter (for adults) is defined as thrombocytopenia. Platelets are blood cells that help in blood clotting and wound healing — risks associated with thrombocytopenia range from no risk at all to bleeding risks and thrombosis. The correlation of severity of thrombocytopenia and bleeding risk is uncertain. Spontaneous bleeding can occur with a platelet count under 10000/microliter and surgical bleeding with counts below 50000/microL. Thrombocytopenia is associated with risk of thrombosis in conditions like heparin-induced thrombocytopenia (HIT), antiphospholipid antibody syndrome (APS), disseminated intravascular coagulation (DIC), thrombotic microangiopathy (TMA), paroxysmal nocturnal hemoglobinuria (PNH).

John J, Gupta R, Jhaveri P, Leon EM, Cox E, Raskin J, Khatter NJ, Sayal R and Folbe A (2022).

"Tonsillectomy and social media: An investigative analysis of educational tonsillectomy content on tiktok." [Health Science Reports](#) 5(4): e618.

[Full Text](#)

OUWB Medical Student Author

Department of Surgery

Johnson S, **Mielke N, Mathew T, Maine GN**, Chen NW and **Bahl A** (2022). "Predictors of hospitalization and severe disease due to breakthrough SARS-COV-2 infection in fully vaccinated individuals." [Journal of the American College of Emergency Physicians Open](#) 3(4): e12793.

[Full Text](#)

OUWB Medical Student Author

Department of Internal Medicine/Infectious Disease

Department of Pathology

Department of Emergency Medicine

Objective: We aimed to identify risk factors for hospital admission and severe disease among fully vaccinated (FV) individuals with COVID-19. Further, we investigated if risk factors for hospitalization and severe disease are similar between unvaccinated (UV) and vaccinated individuals. **Methods:** This was a multicenter, observational cohort analysis from a large regional healthcare system in metro Detroit using electronic health record data to evaluate risk factors for hospitalization and severe COVID-19 disease. Vaccination data were retrieved using electronic medical records linked to our statewide immunization database. Consecutive adult FV and UV patients with a primary admission diagnosis of COVID-19 were included in the comparative analysis. Partially vaccinated patients and patients who had received a booster dose were excluded. The primary outcome of this study was hospital admission and severe disease inclusive of intensive care unit (ICU) admission, mechanical ventilation, or death. **Results:** Between December 15, 2020 and December 19, 2021, 20,584 emergency department visits met our inclusion criteria. Among these, 2005 (9.7%) visits consisted of FV individuals, 18,579 (90.3%) were UV, and 40.3% of UV and 52.7% of FV required hospitalization with similar (12.7% and 12.6%, respectively) rates of severe disease. Hospitalized UV patients with severe disease were younger than their FV counterparts (49.5% <65 years vs. 13.5% p < 0.001). Risk factors for severe disease on UV and FV included age ≥65 years (UV: adjusted odds ratio [aOR] 1.49, 95% confidence interval [CI] 1.28-1.73, p < 0.001 and FV: aOR 2.50, 95% CI 1.44-4.36 p =

0.001) and weighted Elixhauser score >10 (UV: aOR 9.11, 95% CI 6.92-12.00, $p < 0.001$ and FV: aOR 6.04, 95% CI 2.68-13.26, $p < 0.001$). However, only on UV status, body mass index (BMI) ≥ 30 kg/m² was associated with increased odds of severe disease (aOR 2.59, 95% CI 2.09-3.22, $p < 0.001$). Conclusions: FV patients with breakthrough SARS-CoV-2 infection who require hospitalization and have severe disease are older and have more medical comorbidities compared to UV patients. When comparing risk factors for severe disease between UV and FV individuals, FV status is particularly associated with reduced risk among patients with a BMI ≥ 30 kg/m² and a moderate number of medical comorbidities, regardless of age, highlighting the importance of vaccination in these particularly vulnerable groups.

Johnson SE, **Pai E**, Voroba A, Chen NW and **Bahl A** (2022). "Examining D-dimer and empiric anticoagulation in COVID-19-related thrombosis." *Cureus* 14(7): e26883.

[Full Text](#)

OUWB Medical Student Author

Department of Emergency Medicine

Objective: Thrombosis is thought to occur frequently in the setting of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. We aimed to elucidate the relationship between macro/microvascular thrombosis, D-dimer levels, and empiric anticoagulation in coronavirus disease 2019 (COVID-19). **Methods:** This was an exploratory prospective, single-site, observational study. Adult emergency department patients with COVID-19 requiring hospitalization received a point-of-care lower extremity venous duplex ultrasound. The primary endpoint was thromboembolism and associated D-dimer level. Secondary endpoints included rates of micro and macro thrombotic complications as well as empiric anticoagulant use. **Results:** Between January 13(th) and April 12(th) 2021, 52 patients were enrolled. Median D-dimer at presentation was 650 ng/mL (range 250-10,000 ng/mL) among patients with negative duplex studies. During hospitalization, 18 patients underwent 20 additional studies assessing for venous thromboembolism (VTE). These studies yielded one deep vein thrombosis (DVT) diagnosis. Among patients with negative studies median D-dimer was 1,246 ng/mL (range 329-10,000 ng/mL). Two patients experienced microvascular complications. Seven patients were started on empiric full dose anticoagulation. **Conclusion:** While VTE remains a major concern amongst patients with COVID-19, the normal D-dimer cut off of >500 ng/mL likely should not be used to initiate further VTE workup. Additionally, moderately elevated D-dimer did not correlate strongly with microvascular complications and may not be relevant in the decision to initiate empiric anticoagulation.

Kakish D, **Tominna M** and **Krishnan A** (2022). "Hemimegalencephaly: Evolution from an atypical focal early appearance on fetal MRI to more conventional MR findings." *Cureus* 14(8): e27976.

[Full Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Hemimegalencephaly, or unilateral megalencephaly, is a sporadic congenital brain malformation characterized by enlargement of a cerebral hemisphere due to an abnormal proliferation of neurons or glial cells. Hemimegalencephaly is part of a spectrum of disorders, increasingly referred to as mTORopathies, which arise as a result of dysregulation or hyperactivation of the mammalian target of rapamycin (mTOR)-signaling cascade resulting in less restricted cell growth and survival. The resultant cortical disorganization and enhanced neuronal excitability often manifest clinically in the form of seizures. Ultrasound and magnetic resonance imaging (MRI) are often used to characterize hemimegalencephaly. Typical imaging findings seen include diffuse unilateral enlargement of a cerebral hemisphere with overlying cortical malformation and

ipsilateral dilation of the lateral ventricle. This paper will review an unusual case of focal hemimegalencephaly diagnosed on prenatal imaging. Initial in utero MRI revealed a mass-like lesion in the frontal lobe without associated perilesional cerebral edema. Keying in on abnormalities within the overlying cortex was crucial in suggesting focal hemimegalencephaly as a leading diagnosis and distinguishing it from alternative diagnoses such as a neoplasm. Follow-up fetal MRI demonstrated the evolution of the cerebral abnormality and confirmed the diagnosis. Early diagnosis facilitated appropriate counseling of the parents and guided postnatal imaging and management.

Kasetty VM and **Ober MD** (2022). "Scleral-fixated IOLs: A modified approach: An optimization of methods to improve efficiency when managing a scleral-fixated intraocular lenses in the operating room." Retina Specialist 8(5): 17-41.

[Full Text](#)

Department of Ophthalmology

Kemper AR, Newman TB, Slaughter JL, **Maisels MJ**, Watchko JF, Downs SM, Grout RW, Bundy DG, Stark AR, Bogen DL, Holmes AV, Feldman-Winter LB, Bhutani VK, Brown SR, Maradiaga Panayotti GM, Okechukwu K, Rappo PD and Russell TL (2022). "Clinical practice guideline revision: Management of hyperbilirubinemia in the newborn infant 35 or more weeks of gestation." Pediatrics 150(3): e2022058859.

[Full Text](#)

Department of Pediatrics

Kesarwani P, Kant S, Zhao Y and **Chinnaiyan P** (2022). "Quinolate promotes immune tolerance through macrophage polarization in glioblastoma." bioRxiv. ePub Ahead of Print.

[Full Text](#)

Department of Radiation Oncology

There has been considerable scientific effort dedicated to understanding the biologic consequence and therapeutic implications of aberrant tryptophan metabolism in brain tumors and neurodegenerative diseases. An overwhelming majority of this work has focused on the upstream metabolism of tryptophan; however, this has not resulted in clinical application. Using global metabolomic profiling of patient-derived brain tumors, we identify the downstream metabolism of tryptophan and accumulation of quinolate (QA) as a metabolic node in glioblastoma and went on to demonstrate its critical role in promoting immune tolerance. QA acts as a "metabolic checkpoint" in glioblastoma by inducing NMDA receptor activation and Foxo1/PPAR γ signaling, resulting in amplification of immune suppressive macrophages. Using a genetically-engineered mouse model designed to inhibit production of QA, we identify kynureninase as a promising therapeutic target to revert the potent immune suppressive microenvironment in glioblastoma. These findings offer the scientific community an opportunity to revisit the biologic consequence of this pathway as it relates to oncogenesis and neurodegenerative disease and a framework for developing new immune modulatory agents to further clinical gains in these otherwise incurable diseases.

Kesserwan S, **Lewis BE**, Mao L, Sharafieh R, Atwood T, Kreutzer DL and Klueh U (2022). "Inflammation at site of insulin infusion diminishes glycemic control." Journal of Pharmaceutical Sciences 111(7): 1952-1961.

[Request Form](#)

Department of Foundational Medical Studies (OU)

Khalili H, Pibarot P, Hahn RT, Elmariah S, Pilgrim T, Bavry AA, Maini B, Okuno T, Al-Azizi K, Waggoner TE, Mack M, Rodès-Cabau J and **Abbas AE** (2022). "Transvalvular pressure gradients and all-cause mortality following TAVR: A multicenter echocardiographic and invasive registry." JACC Cardiovascular Interventions 15(18): 1837-1848.

[Request Form](#)

Department of Internal Medicine/Cardiovascular Disease

Background: Low ejection fraction (EF) and low flow as determined by an echocardiographic stroke volume index (SVi) $<35 \text{ mL/m}^2$ are associated with low transvalvular gradients and increased mortality in both severe aortic stenosis (AS) and post-transcatheter aortic valve replacement (TAVR). Absence of an elevated echocardiographic transaortic gradient post-TAVR is considered a marker of procedural success despite the absence of data on its impact on mortality. Objectives: The authors sought to examine the association of invasive and echocardiographic gradients post-TAVR with all-cause mortality in relation to flow and EF. Methods: In a multicenter retrospective registry of patients undergoing TAVR, Cox models with regression splines explored the relationship between invasive and echocardiographic gradients post-TAVR with 2-year mortality. An invasive gradient $<5 \text{ mm Hg}$ was considered low, between ≥ 5 and $<10 \text{ mm Hg}$ was considered intermediate, and $\geq 10 \text{ mm Hg}$ was considered high. An echocardiographic gradient $<10 \text{ mm Hg}$ was considered low, ≥ 10 and $<20 \text{ mm Hg}$ was considered intermediate, and $\geq 20 \text{ mm Hg}$ was considered high. Results: Higher mortality occurred in low echocardiographic gradients at discharge relative to intermediate gradients ($P < 0.001$), and low gradient was associated with lower EF and echocardiographic SVi ($P < 0.001$ and $P < 0.008$, respectively). Lower mortality occurred in low invasive gradients relative to intermediate gradients ($P = 0.012$) with no difference in EF and echocardiographic SVi between groups ($P = 0.089$ and $P = 0.947$, respectively). There were insufficient observations to determine the impact of high echocardiographic and invasive gradients on mortality. Conclusions: In this large retrospective analysis, the impact of transaortic gradients on mortality after TAVR was not linear and complex, showing opposite results among echocardiographic and invasive measurements in low-gradient patients.

Khanna S, **Sims M**, Louie TJ, Fischer M, LaPlante K, Allegretti J, Hasson BR, Fonte AT, McChalicher C, Ege DS, Bryant JA, Straub TJ, Ford CB, Henn MR, Wang EEL, von Moltke L and Wilcox MH (2022). "SER-109: An oral investigational microbiome therapeutic for patients with recurrent *Clostridioides difficile* infection (rCDI)." Antibiotics 11(9): 1234.

[Full Text](#)

Department of Internal Medicine/Infectious Disease

Clostridioides difficile infection (CDI) is classified as an urgent health threat by the Centers for Disease Control and Prevention (CDC), and affects nearly 500,000 Americans annually. Approximately 20-25% of patients with a primary infection experience a recurrence, and the risk of recurrence increases with subsequent episodes to greater than 40%. The leading risk factor for CDI is broad-spectrum antibiotics, which leads to a loss of microbial diversity and impaired colonization resistance. Current FDA-approved CDI treatment strategies target toxin or toxin-producing bacteria, but do not address microbiome disruption, which is key to the pathogenesis of recurrent CDI. Fecal microbiota transplantation (FMT) reduces the risk of recurrent CDI through the restoration of microbial diversity. However, FDA safety alerts describing hospitalizations and deaths related to pathogen transmission have raised safety concerns with the use of unregulated and unstandardized donor-derived products. SER-109 is an investigational oral microbiome therapeutic composed of purified spore-forming Firmicutes.

SER-109 was superior to a placebo in reducing CDI recurrence at Week 8 (12% vs. 40%, respectively; $p < 0.001$) in adults with a history of recurrent CDI with a favorable observed safety profile. Here, we discuss the role of the microbiome in CDI pathogenesis and the clinical development of SER-109, including its rigorous manufacturing process, which mitigates the risk of pathogen transmission. Additionally, we discuss compositional and functional changes in the gastrointestinal microbiome in patients with recurrent CDI following treatment with SER-109 that are critical to a sustained clinical response.

Khatter NJ and Khan MAB (2022). "Clotrimazole." [StatPearls](#).

[Full Text](#)

OUWB Medical Student Author

Clotrimazole is a medication used in the management and treatment of fungal infections. It is in the imidazole class of drugs. This activity outlines the indications, action, and contraindications for clotrimazole as a valuable agent in the treatment of fungal infections.

Kim R, Lin T, Pang G, Liu Y, Tungate AS, Hendry PL, Kurz MC, Peak DA, Jones J, Rathlev NK, **Swor RA**, Domeier R, Velilla MA, Lewandowski C, Datner E, Pearson C, Lee D, Mitchell PM, McLean SA and Linnstaedt SD (2022). "Derivation and validation of risk prediction for posttraumatic stress symptoms following trauma exposure." [Psychological Medicine](#). ePub Ahead of Print.

[Full Text](#)

Department of Emergency Medicine

Background: Posttraumatic stress symptoms (PTSS) are common following traumatic stress exposure (TSE). Identification of individuals with PTSS risk in the early aftermath of TSE is important to enable targeted administration of preventive interventions. In this study, we used baseline survey data from two prospective cohort studies to identify the most influential predictors of substantial PTSS. Methods: Self-identifying black and white American women and men ($n = 1546$) presenting to one of 16 emergency departments (EDs) within 24 h of motor vehicle collision (MVC) TSE were enrolled. Individuals with substantial PTSS (≥ 33 , Impact of Events Scale - Revised) 6 months after MVC were identified via follow-up questionnaire. Sociodemographic, pain, general health, event, and psychological/cognitive characteristics were collected in the ED and used in prediction modeling. Ensemble learning methods and Monte Carlo cross-validation were used for feature selection and to determine prediction accuracy. External validation was performed on a hold-out sample (30% of total sample). Results: Twenty-five percent ($n = 394$) of individuals reported PTSS 6 months following MVC. Regularized linear regression was the top performing learning method. The top 30 factors together showed good reliability in predicting PTSS in the external sample (Area under the curve = 0.79 ± 0.002). Top predictors included acute pain severity, recovery expectations, socioeconomic status, self-reported race, and psychological symptoms. Conclusions: These analyses add to a growing literature indicating that influential predictors of PTSS can be identified and risk for future PTSS estimated from characteristics easily available/assessable at the time of ED presentation following TSE.

Ko MY, Yang X, **Kamel-Elsayed S** and **Kuang SY** (2022). "Vascular function curve: Confusion, clarification and new insights." [American Journal of Cardiovascular Disease](#) 12(4): 254-261.

[Full Text](#)

OUWB Medical Student Author

Department of Foundational Medical Studies (OU)

The vascular function curve (VFC) in cardiovascular physiology describes the relationship

between the steady state venous return (VR in L/min, in the Y-axis) and the steady state right atrial pressure (RAP in mmHg, in the X-axis). However, in some literature, the RAP is considered the independent variable (IV) and the VR the dependent variable (DV), whereas in other literature, the VR is the IV and the RAP the DV. Because of this confusion, when the VFC is combined with the cardiac function curve (CFC), which describes the relationship between the steady state cardiac output and the RAP, it is not strange that the interpretations of the combination are problematic. Hence, in this article, we will trace the origin of the inconsistency, differentiate the VFC into two types based on who created them, and differentiate the RAP into RAP as the IV and DV respectively. Through these in-depth analyses, the confusion will be clarified and new insights into the combination of a VFC with the CFC will develop.

Ko MY, Yang X, Kamel-Elsayed S and Kuang SY (2022). "Commentary: Vascular function curve: Confusion, clarification and new insights." *American Journal of Cardiovascular Disease* 12(4): 254-261.

[Full Text](#)

OUWB Medical Student Author

Department of Foundational Medical Studies (OU)

The vascular function curve (VFC) in cardiovascular physiology describes the relationship between the steady state venous return (VR in L/min, in the Y-axis) and the steady state right atrial pressure (RAP in mmHg, in the X-axis). However, in some literature, the RAP is considered the independent variable (IV) and the VR the dependent variable (DV), whereas in other literature, the VR is the IV and the RAP the DV. Because of this confusion, when the VFC is combined with the cardiac function curve (CFC), which describes the relationship between the steady state cardiac output and the RAP, it is not strange that the interpretations of the combination are problematic. Hence, in this article, we will trace the origin of the inconsistency, differentiate the VFC into two types based on who created them, and differentiate the RAP into RAP as the IV and DV respectively. Through these in-depth analyses, the confusion will be clarified and new insights into the combination of a VFC with the CFC will develop.

Kronner JM, Folbe A, Meythaler J, Nelson JO, Borisov A and Peduzzi JD (2022). "Intranasally applied human olfactory mucosa neural progenitor cells migrate to damaged brain regions." *Future Science OA* 8(6): Fso806.

[Full Text](#)

Department of Surgery

Aim: To determine if intranasally administered olfactory mucosa progenitor cells (OMPCs) migrate to damaged areas of brain. Materials & Methods: Rowett Nude (RNU) adult rats were injured using the Marmarou model then 2 weeks later received intranasally-delivered human OMPC. After 3 weeks, rats were sacrificed and brain sectioned. The mean distances from the human OMPCs to markers for degenerative neuronal cell bodies (p-c-Jun(+)), axonal swellings on damaged axons (β -APP(+)) and random points in immunostained sections were quantified. One-way ANOVA was used to analyze data. Results: The human OMPCs were seen in specific areas of the brain near degenerating cell bodies and damaged axons. Conclusion: Intranasally delivered human OMPC selectively migrate to brain injury sites suggesting a possible noninvasive stem cell delivery for brain injury.

Kumar M, Peters M, Karabon P and Brahmamdam P (2022). "Clostridioides difficile infection after appendectomy: An analysis of short-term outcomes from the NSQIP database." *Surgery* 172(3): 791-797.

[Full Text](#)

OUWB Medical Student Author

Department of Pediatrics

Background: *Clostridioides difficile* infection can be a significant complication in surgical patients. The purpose of this study was to describe the incidence and impact on outcomes of *Clostridioides difficile* infection in adult patients after appendectomy. Methods: The American College of Surgeons National Surgical Quality Improvement Program data set was used to identify all patients with the primary procedure code of appendectomy between 2016 and 2018. Patient demographics and clinical characteristics were extracted from the database, and descriptive statistics were performed. A multivariate logistic regression was created to identify predictors of *Clostridioides difficile* infection following appendectomy. Results: A total of 135,272 patients who underwent appendectomy were identified, and of those, 469(0.35%) developed *Clostridioides difficile* infection. Patients with *Clostridioides difficile* infection were more likely to be older (51.23 vs 40.47 years; $P < .0001$), female ($P = .004$), American Society of Anesthesiology score >2 ($P < .0001$), present with septic shock ($P < .0001$), or lack functional independence ($P < .0001$). Patients with *Clostridioides difficile* infection were more likely to have increased operative time (62.9 vs 50.4 minutes; $P < .0001$), have perforated appendicitis (48.9% vs 23.5%; $P < .0001$), and underwent open surgery (7.0% vs 4.0%; $P = .0006$). Postoperatively, patients with *Clostridioides difficile* infection required a longer length of stay (4.8 vs 1.8 days; $P < .0001$), had increased mortality (2.1% vs 0.1%; $P < .0001$), higher incidences of postoperative abscess (14.9% vs 2.9%; $P < .0001$), postoperative sepsis (15.1% vs 4.0%; $P < .0001$), and readmission (30.7% vs 3.4%; all $P < .0001$). On multivariate analysis, older age ($P < .0001$), female sex ($P = .0043$), septic shock ($P = .0002$), open surgery ($P = .037$), and dirty wound class ($P = .0147$) were all independently predictive factors of *Clostridioides difficile* infection after appendectomy. Conclusion: *Clostridioides difficile* infection is an uncommon postoperative complication of appendectomy and is associated with worse outcomes and higher mortality. Older patients, female sex, those with sepsis, and those undergoing open surgery are at higher risk for developing *Clostridioides difficile* infection.

Lavelle WF, Sasso RC, Hu SS, Bae HW, Yoon ST, Villavicencio AT, Kim KD, Bains RS, Kuo CC, Stauff M, Sandhu HS, **Perez-Cruet MJ**, Berven SH, **Fischgrund JS**, Deutsch H, Hassanzadeh H, Yu E, Ray WZ, Metkar US and Chapman JR (2022). "24. Return to work, activities of daily living and disability improvement: Twelve-month outcomes of an FDA IDE trial of decompression and tension band stabilization for degenerative spondylolisthesis." *Spine Journal* 22(9): S12-S12.

[Full Text](#)

Department of Neurosurgery

Department of Orthopaedic Surgery

Lavie CJ, **Franklin BA** and Ferdinand KC (2022). "Improving behavioral counseling for primary cardiovascular disease prevention." *JAMA Cardiology* 7(9): 886-888.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Lee PB, Miano DI, Sesselmann M, Johnson J, Chung MT, Abboud M, Johnson AP and Zuliani GF (2022). "RealSelf social media analysis of rhinoplasty patient reviews." *Journal of Plastic, Reconstructive and Aesthetic Surgery* 75(7): 2368-2374.

[Full Text](#)

OUWB Medical Student Author

Background: Social media has become increasingly important for patients when deciding whether they should undergo rhinoplasty. The purpose of this study is to analyze patient

satisfaction of rhinoplasty procedures through RealSelf social media reviews. Methods: We collected data from 583 rhinoplasty reviews published on the RealSelf portal. In posts dated between 2016 and 2020, we included those which were labeled as “Worth It” and “Not Worth It.” Posts that were labeled as “Unsure” or were left unlabeled were excluded from the study. In addition, posts not including the cost of their rhinoplasty were excluded. Taking into account patient demographics and cost of the procedure, we analyzed reasons for choosing to undergo surgery, reasons for choosing surgeons, and reasons for liking or disliking their procedure. Results: Of the 583 reviews analyzed, most (45.4%) were categorized from the 18-24 years age group and there was an overall 93.8% satisfaction rate. While there was no statistically significant difference in the cost of rhinoplasty surgeries between “Worth It” and “Not Worth It” groups, the average cost of recorded rhinoplasties was US\$ 8043 with a standard deviation \pm \$3296. According to our analysis, younger patients aged 18-24 years relied more on social media to choose their surgeons and desired a more natural appearance to their nose while older ones preferred compatible physician personalities and increased self-esteem for rhinoplasty. Conclusion: This study offers a unique perspective into the distinguishing characteristics of different age groups and the values they place in pursuing rhinoplasty, choosing their surgeons, and why they like/dislike their surgical outcomes.

Lee Y, Jehangir Q, Lin CH, Li P, Sule AA, Poisson L, Balijepally V, **Halabi AR**, Patel K, Krishnamoorthy G and **Nair GB** (2022). "3D-past: Risk assessment model for predicting venous thromboembolism in COVID-19." Journal of Clinical Medicine 11(14): 3949.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Department of Internal Medicine/Pulmonary & Critical Care Medicine

Hypercoagulability is a recognized feature in SARS-CoV-2 infection. There exists a need for a dedicated risk assessment model (RAM) that can risk-stratify hospitalized COVID-19 patients for venous thromboembolism (VTE) and guide anticoagulation. We aimed to build a simple clinical model to predict VTE in COVID-19 patients. This large-cohort, retrospective study included adult patients admitted to four hospitals with PCR-confirmed SARS-CoV-2 infection. Model training was performed on 3531 patients hospitalized between March and December 2020 and validated on 2508 patients hospitalized between January and September 2021. Diagnosis of VTE was defined as acute deep vein thrombosis (DVT) or pulmonary embolism (PE). The novel RAM was based on commonly available parameters at hospital admission. LASSO regression and logistic regression were performed, risk scores were assigned to the significant variables, and cutoffs were derived. Seven variables with assigned scores were delineated as: DVT History = 2; High D-Dimer (>500–2000 ng/mL) = 2; Very High D-Dimer (>2000 ng/mL) = 5; PE History = 2; Low Albumin (<3.5 g/dL) = 1; Systolic Blood Pressure <120 mmHg = 1, Tachycardia (heart rate >100 bpm) = 1. The model had a sensitivity of 83% and specificity of 53%. This simple, robust clinical tool can help individualize thromboprophylaxis for COVID-19 patients based on their VTE risk category.

Li P, Lee Y, Jehangir Q, Lin CH, Krishnamoorthy G, Sule AA, **Halabi AR**, Patel K, Poisson L and **Nair GB** (2022). "SARS-COV-ATE risk assessment model for arterial thromboembolism in COVID-19." Scientific Reports 12(1): 16176.

[Full Text](#)

OUWB Medical Student Author

Department of Internal Medicine/Pulmonary & Critical Care Medicine

Patients with SARS-CoV-2 infection are at an increased risk of cardiovascular and thrombotic

complications conferring an extremely poor prognosis. COVID-19 infection is known to be an independent risk factor for acute ischemic stroke and myocardial infarction (MI). We developed a risk assessment model (RAM) to stratify hospitalized COVID-19 patients for arterial thromboembolism (ATE). This multicenter, retrospective study included adult COVID-19 patients admitted between 3/1/2020 and 9/5/2021. Among 3531 patients from the training cohort, 15.5% developed acute in-hospital ATE, including stroke, MI, and other ATE, compared to 13.4% in the validation cohort. The 16-item final score was named SARS-COV-ATE (Sex: male = 1, Age [40-59 = 2, > 60 = 4], Race: non-African American = 1, Smoking = 1 and Systolic blood pressure elevation = 1, Creatinine elevation = 1; Over the range: leukocytes/lactate dehydrogenase/interleukin-6, B-type natriuretic peptide = 1, Vascular disease (cardiovascular/cerebrovascular = 1), Aspartate aminotransferase = 1, Troponin-I [> 0.04 ng/mL = 1, troponin-I > 0.09 ng/mL = 3], Electrolytes derangement [magnesium/potassium = 1]). RAM had a good discrimination (training AUC 0.777, 0.756-0.797; validation AUC 0.766, 0.741-0.790). The validation cohort was stratified as low-risk (score 0-8), intermediate-risk (score 9-13), and high-risk groups (score ≥ 14), with the incidence of ATE 2.4%, 12.8%, and 33.8%, respectively. Our novel prediction model based on 16 standardized, commonly available parameters showed good performance in identifying COVID-19 patients at risk for ATE on admission.

Lick D, Mirza N and Trevor R (2022). "Are cannabinoids effective for treatment of noncancer musculoskeletal pain?" *Evidence-Based Practice* 25(7): 40-41.

[Full Text](#)

Department of Family Medicine and Community Health

Lim S, Bazydlo M, Macki M, Haider S, Hamilton T, Hunt R, Chaker A, Katak P, Schultz L, Nerenz D, Schwalb JM, Abdulhak M, Park P, Aleem I, Easton R, **Khalil JG**, **Perez-Cruet MJ** and Chang V (2022). "Validation of the benefits of ambulation within 8 hours of elective cervical and lumbar surgery: A Michigan Spine Surgery Improvement Collaborative study." *Neurosurgery* 91(3): 505-512.

[Full Text](#)

Department of Orthopaedic Surgery

Department of Neurosurgery

Background: Early ambulation is considered a key element to Enhanced Recovery After Surgery protocol after spine surgery. Objective: To investigate whether ambulation less than 8 hours after elective spine surgery is associated with improved outcome. Methods: The Michigan Spine Surgery Improvement Collaborative database was queried to track all elective cervical and lumbar spine surgery between July 2018 and April 2021. In total, 7647 cervical and 17 616 lumbar cases were divided into 3 cohorts based on time to ambulate after surgery: (1) < 8 hours, (2) 8 to 24 hours, and (3) > 24 hours. Results: For cervical cases, patients who ambulated 8 to 24 hours (adjusted odds ratio [aOR] 1.38; 95% CI 1.11-1.70; $P = .003$) and > 24 hours (aOR 2.20; 95% CI 1.20-4.03; $P = .011$) after surgery had higher complication rate than those who ambulated within 8 hours of surgery. Similar findings were noted for lumbar cases with patients who ambulated 8 to 24 hours (aOR 1.31; 95% CI 1.12-1.54; $P < .001$) and > 24 hours (aOR 1.96; 95% CI 1.50-2.56; $P < .001$) after surgery having significantly higher complication rate than those ambulated < 8 hours after surgery. Analysis of secondary outcomes for cervical cases demonstrated that < 8 -hour ambulation was associated with home discharge, shorter hospital stay, lower 90-day readmission, and lower urinary retention rate. For lumbar cases, < 8 -hour ambulation was associated with shorter hospital stay, satisfaction with surgery, lower 30-day readmission, home discharge, and lower urinary retention rate. Conclusion: Ambulation within 8

hours after surgery is associated with significant improved outcome after elective cervical and lumbar spine surgery.

Lopatin T, Ko M, **Brown E**, Goble D and Haworth J (2022). "Balance testing for patients with type 2 diabetes." Journal of Diabetes Science and Technology. ePub Ahead of Print.

[Full Text](#)

Department of Surgery

Lyu X, Li M, **Zhang PL**, Wei W, Werth V and Liu M (2022). "556 inhibition of neutrophil netosis ameliorates UVB-induced skin inflammation and kidney injury in lupus mice." Journal of Investigative Dermatology 142(8): S94.

[Request Form](#)

Department of Pathology

Background: Ultraviolet B (UVB) triggers lupus flares by worsening skin lesions and systemic symptoms, including lupus nephritis. The effects of UVB-induced skin inflammation on kidney injury are not well understood. Neutrophil NETosis has been implicated in lupus. We have reported that UVB induces skin inflammation with recruitment of neutrophils that form NETs and display NET-associated cytokines. We also found that strengthening nuclear envelope integrity by lamin B overexpression decrease NETosis and NET-associated cytokines in the skin of UVB-irradiated *lmbn1Tg* mice. Others reported that neutrophils are involved in skin inflammation, kidney injury and transient proteinuria in wildtype mice with UVB exposure. However, the role of NETosis in UVB-mediated lupus flare in skin and kidneys has not been studied. Methods: We generated lupus prone mice with lamin B overexpression, and exposed the female MRL/lpr-*lmbn1Tg* and control MRL/lpr mice (8-week-old) to UVB at 150 mJ/cm²/day for 5 consecutive days. Results: We found that UVB exposure increased skin thickness and proteinuria, with increased infiltrates, NET formation, NET-associated IFN α and IL-17A, both in skin and kidneys of MRL/lpr mice. Interestingly, strengthening the nuclear envelope decreased NET formation and ameliorated the above inflammatory responses both in skin and kidneys, with decreased proteinuria and hypercellularity in the kidneys of MRL/lpr-*lmbn1Tg* mice as compared to their controls. Interestingly, the skin infiltrates ($r=0.57$, $p<0.05$) and NET formation in skin ($r=0.54$, $p<0.05$) were positively correlated with proteinuria. Importantly, hypercellularity ($r=0.65$, $p<0.01$), NET formation ($r=0.56$, $p<0.05$), NET-associated IFN α ($r=0.49$, $p < 0.01$) or IL-17A ($r = 0.47$, $p < 0.05$) in glomeruli were positively correlated with proteinuria. Conclusion: Inhibition of NET formation by overexpression of lamin B can ameliorate UVB-triggered skin inflammation, proteinuria and kidney injury in young lupus prone mice.

MacMillan TE, Shin S, **Topf J**, Kwan J, Weirnerman A, Tang T, Raissi A, Koppula R, Razak F, Verma AA and Fralick M (2022). "Rates of osmotic demyelination after rapid correction of sodium in hyponatremia, a multicenter cohort study of patients hospitalized with hyponatremia." medRxiv. ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine/Nephrology

Background: Osmotic demyelination syndrome (ODS) is a rare but devastating complication of rapid correction of hyponatremia. Current guidelines recommend limiting the sodium correction rate to no more than 8 mmol/L per 24 hours, but this is based on expert opinion and small observational studies. Methods: We conducted a multicenter cohort study of patients admitted into hospital with hyponatremia at five academic hospitals in Toronto between April 1, 2010 and December 31, 2019. We identified all adult patients with hyponatremia (sodium <130 mmol/L) based on their initial serum sodium measured on presentation to the emergency department.

The primary outcome was the rate of ODS. ODS cases were identified using medical record review and neuroimaging results. The secondary outcome was the rate of rapid correction of sodium (>8 mmol/L in any 24-hour period). Results: Our cohort included 21182 hospitalizations with hyponatremia. Approximately 50% were women, the average age was 68 years, and mean initial sodium was 124.6 mmol/L (SD 4.6) including 13.1% with sodium <120 mmol/L. Overall, rapid correction of sodium occurred in 3438 (17.9%) admissions. Despite the fact that 3438 experienced rapid correction, there were only 12 cases of ODS among our 21182 hospitalizations with hyponatremia. Cases of ODS had a markedly lower initial serum sodium (110.7 vs. 124.6 mmol/L), were younger (50 years vs 68 years), were more likely to have alcohol use disorder, and were more likely to have hypokalemia (58% vs 14%) compared to those without ODS. Conclusions: In the large multicenter study of patients with hyponatremia, "rapid" overcorrection was common (N=3438, 17.9%) but ODS was rare (N=12, 0.06%). The initial serum sodium was markedly lower for those with ODS compared to those without. Taken together, these results suggest that the severity of hyponatremia is a more important risk factor for ODS than the rate of correction.

Madanat L, Schott J, Mando R, **Hanson I**, Renard B, Fazzalari F, Khalili H and **Abbas A** (2022). "TCT-367 is discordance between echocardiography and invasive transaortic valve mean gradients related to pressure recovery?" Journal of the American College of Cardiology 80(12): B147-B148.

[Request Form](#)

Department of Internal Medicine/Cardiovascular Disease

Mansfield SA, Morrison Z, Utria AF, Reyes C, Garcia AV and **Stallion A** (2022). "Improving pathways to eliminate underrepresentation in the pediatric surgery workforce: A call to action." Journal of Pediatric Surgery 57(7): 1309-1314.

[Full Text](#)

Department of Surgery

Despite progress, diversity and minority representation within the pediatric surgery workforce still does not match the expansive backgrounds of the patients we treat. The problem stems from underrepresentation of minority populations at every step along the pediatric surgery training pathway. Strategies aimed at improving diversity and representation in medical school, general surgery residencies, and ultimately pediatric surgery fellowship are necessary to assemble a more diverse pool of pediatric surgeons. The aim of this paper is to review the current demographic make-up of medical and surgical specialties, highlight the value of diversity, and provide evidence-based strategies for increasing minority representation throughout the pediatric surgery pathway. Future patients will be better served with a more representative pediatric surgery workforce. (C) 2022 Elsevier Inc. All rights reserved.

Mansour MR, Abushukur Y and Potts GA (2022). "Keratosis pilaris on TikTok: A cross-sectional analysis of trending content." JAAD International 8: 116-117.

[Full Text](#)

OUWB Medical Student Author

Markel JF, Driscoll JA, Zheng TH, Hughes RE, **Moore DD**, Hallstrom BR and Markel DC (2022). "Causes of early hip revision vary by age and gender: Analysis of data from a statewide quality registry." Journal of Arthroplasty 37: S616-S621.

[Full Text](#)

Department of Orthopaedic Surgery

Background: While total hip arthroplasty (THA) is extremely successful, early failures do occur. The purpose of this study was to determine the cause of revision in specific patient demographic groups at 3 time points to potentially help decrease the revision risk. Methods: Data for cases performed between 2012 and 2018 from a statewide, quality improvement arthroplasty registry were used. The database included 79,205 THA cases and 1,433 revisions with identified etiology (1,584 in total). All revisions performed at <5 years from the primary THA were reviewed. Six groups, men/women, <65, 65-75, and >75 years, were compared at revision time points <6 months, <1 year, and <5 years. Results: There were obvious and significant differences between subgroups based on demographics and time points ($P < .0001$). Seven hundred and fifty-six (53%) of all revisions occurred within 6 months. The most common etiologies within 6 months (756 revisions) were fracture (316, 41.8%), dislocation/instability (194, 25.7%), and infection (98, 12.9%). At this early time point, the most common revision cause was fracture for all age/gender-stratified groups, ranging from 27.6% in young men to 60% in older women. Joint instability became the leading cause for revision after 1 year in all groups. Conclusion: This quality improvement project demonstrated clinically meaningful differences in the reason for THA revision between gender, age, and time from surgery. Strategies based on these data should be employed by surgeons to minimize the factors that lead to revision.

Marlow ED, Bakhsh SR, Reddy DN, Farley ND, **Williams GA** and **Mahmoud TH** (2022). "Reply to Drs. Nikolaos and Panagiotis Dervenis re: Combined epiretinal and internal limiting membrane retracting door flaps for large macular holes associated with epiretinal membranes." [Graefe's Archive for Clinical and Experimental Ophthalmology](#) 261: 593.

[Full Text](#)

Department of Ophthalmology

Mazimba S, Jeukeng C, Ondigi O, Mwansa H, Johnson AE, Elumogo C, Breathett K, Kwon Y, Mubanga M, Mwansa V, Baldeo C, Ibrahim S, Selinski C, **Mehta N** and Bilchick K (2022). "Coronary perfusion pressure is associated with adverse outcomes in advanced heart failure." [Perfusion](#). ePub Ahead of Print.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Background: Myocardial perfusion is an important determinant of cardiac function. We hypothesized that low coronary perfusion pressure (CPP) would be associated with adverse outcomes in heart failure. Myocardial perfusion impacts the contractile efficiency thus a low CPP would signal low myocardial perfusion in the face of increased cardiac demand as a result of volume overload. Methods: We analyzed patients with complete hemodynamic data in the Evaluation Study of Congestive Heart Failure and Pulmonary Artery Catheterization Effectiveness trial using Cox Proportional Hazards regression for the primary outcome of the composite risk of death, heart transplantation, or left ventricular assist device [(LVAD). DT × LVAD] and the secondary outcome of the composite risk of DT × LVAD and heart failure hospitalization (DT × LVADHF). CPP was calculated as the difference between diastolic blood pressure and pulmonary artery wedge pressure. Heart failure categories (ischemic vs non-ischemic) were also stratified based on CPP strata. Results: The 158 patients (56.7 ± 13.6 years, 28.5% female) studied had a median CPP of 40 mmHg (IQR 35–52 mmHg). During 6 months of follow-up, 35 (22.2%) had the composite primary outcome and 109 (69.0%) had the composite secondary outcome. When these outcomes were then stratified based on the median, CPP was associated with these outcomes. Increasing CPP was associated with lower risk of both the primary outcome of DT × LVAD (HR 0.96, 95% CI 0.94–0.99 $p = .002$) and as well as the secondary outcome of DT × LVADHF ($p = .0008$) There was significant interaction between CPP and ischemic

etiology (p =.04). Conclusion: A low coronary artery perfusion pressure below (median) 40mmHg in patients with advanced heart failure undergoing invasive hemodynamic monitoring with a pulmonary artery catheter was associated with adverse outcomes. CPP could be useful in guiding risk stratification of advanced heart failure patients and timely evaluation of advanced heart failure therapies.

McGuire D, **Mielke N** and **Bahl A** (2022). "Atypical presentation of traumatic pediatric carotid artery dissection: A case report." Clinical Practice Cases Emergency Medicine 6(3): 229-231.

[Full Text](#)

OUWB Medical Student Author

Department of Emergency Medicine

Introduction: Carotid artery dissection is a rare but serious condition manifesting with signs and symptoms that closely overlap with other more benign medical diagnoses. This vascular injury, however, can result in debilitating sequelae, including thromboembolic cerebrovascular accidents. Case Report: We describe the atypical presentation of a healthy eight-year-old male who presented to the emergency department (ED) with generalized abdominal pain and non-bloody, non-bilious emesis. These symptoms occurred nine days after he sustained blunt head trauma after a non-syncopal fall from standing while playing hockey. He was initially diagnosed with gastroesophageal reflux disease and constipation and was discharged home. The following day he developed an acute headache followed shortly by gait ataxia, prompting a return visit to the ED. Imaging of the head and neck revealed a left internal carotid artery dissection. The patient was started on intravenous unfractionated heparin and admitted to the hospital. He was later discharged symptom-free on therapeutic enoxaparin for eight weeks, followed by daily aspirin therapy. Conclusion: Pediatric trauma patients, especially those sustaining insult to the head and cervical spine, are at risk for craniocervical arterial injuries. This rare but dangerous pathology often manifests in a non-specific, delayed fashion making it a challenging diagnosis for physicians to make on the initial medical encounter. Maintaining a high clinical suspicion for carotid artery dissection is required to make this diagnosis and should guide a thorough history, physical examination, and appropriate imaging in order to improve patient morbidity and mortality. This case emphasizes key clinical features and risk factors of this disease that may help emergency clinicians promptly recognize and treat this entity.

Meadows AM, Skinner MM, **Faraj MT**, Hazime AA, Day RG, **Fore JA** and Day CS (2022). "Racial, ethnic, and gender diversity in academic orthopaedic surgery leadership." Journal of Bone & Joint Surgery, American Volume 104(13): 1157-1165.

[Full Text](#)

OUWB Medical Student Author

Background: Multiple investigations in the past 50 years have documented a lack of racial/ethnic and gender diversity in the orthopaedic surgery workforce when compared with other specialties. Studies in other industries suggest that diversification of leadership can help diversify the underlying workforce. This study investigates changes in racial/ethnic and gender diversity of orthopaedic surgery leadership from 2007 to 2019 and compares leadership diversity to that of other surgical and nonsurgical specialties, specifically in terms of chairpersons and program directors. Methods: Demographic data were collected from The Journal of the American Medical Association and the Association of American Medical Colleges. Aggregate data were utilized to determine the racial, ethnic, and gender composition of academic leadership for 8 surgical and nonsurgical specialties in 2007 and 2019. Comparative analysis was conducted to identify changes in diversity among chairpersons between the 2

years. Furthermore, current levels of diversity in orthopaedic leadership were compared with those of other specialties. Results: A comparative analysis of diversity among program directors revealed that orthopaedic surgery had significantly lower minority representation (20.5%) when compared with the nonsurgical specialties (adjusted $p < 0.01$ for all) and, with the exception of neurological surgery, had the lowest proportion of female program directors overall, at 9.0% (adjusted $p < 0.001$ for all). From 2007 to 2019, orthopaedic surgery experienced no change in minority representation among chairpersons (adjusted $p = 0.73$) but a significant increase in female representation among chairpersons, from 0.0% (0 of 102) to 4.1% (5 of 122) (adjusted $p = 0.04$). Lastly, a significant decrease in minority and female representation was observed when comparing the diversity of 2019 orthopaedic faculty to orthopaedic leadership in 2019/2020 ($p < 0.05$ for all). Conclusions: Diversity in orthopaedic surgery leadership has improved on some key fronts, specifically in gender diversity among chairpersons. However, a significant decrease in minority and gender representation was observed between 2019 orthopaedic faculty and 2019/2020 orthopaedic leadership ($p < 0.05$), which was a trend shared by other specialties. These findings may suggest a more pervasive problem in diversity of medical leadership that is not only limited to orthopaedic surgery.

Miano DI, Cosgrove R, Sherman J, **Balaraman S** and Sherman M (2022). "Pembrolizumab-induced giant cell arteritis in the setting of urothelial carcinoma." Neuro-Ophthalmology. ePub Ahead of Print.

[Request Form](#)

Department of Internal Medicine/Hematology-Oncology

A 65-year-old male presented to the Ophthalmology clinic with painless loss of vision in his right eye. Over the previous week the right eye's vision had progressed from being blurry to complete loss. Three weeks prior to presentation he had begun treatment with pembrolizumab for urothelial carcinoma. Ophthalmological assessment and subsequent imaging prompted further investigation, and a temporal artery biopsy confirmed a diagnosis of giant cell arteritis. This case demonstrates a rare, yet serious, condition of biopsy-confirmed giant cell arteritis in the setting of pembrolizumab treatment for urothelial carcinoma. In addition to reporting a vision threatening side effect of pembrolizumab we emphasize the need for vigilant care of patients on this drug as symptomatology and laboratory results may be inconspicuous.

Mielke N, Johnson S, Karabon P and **Bahl A** (2022). "A prospective sonographic evaluation of peripheral intravenous catheter associated thrombophlebitis." Journal of Vascular Access 23(5): 754-763.

[Request Form](#)

OUWB Medical Student Author

Department of Emergency Medicine

Mitchell P, **Ezeokoli EU**, Borici N, Schleh E and Montgomery N (2022). "Treatment and outcomes of unifocal and multifocal osseous pelvic Langerhans cell histiocytosis lesions in a pediatric population." Cureus 14(8): e28470.

[Full Text](#)

OUWB Medical Student Author

Introduction: Langerhans cell histiocytosis (LCH) is a rare, clonal disorder characterized by proliferation and tissue infiltration by myeloid dendritic cells, most commonly occurring in pediatric populations. It often manifests as skeletal lesions with possible pelvic involvement. Few studies have characterized and reviewed outcomes after treatment of isolated pelvic LCH lesions. Methods: A retrospective single-institution review was conducted on diagnoses of patients younger than 18 with a diagnosis of unifocal or multifocal skeletal LCH lesions involving

the pelvis. Clinical presentations, lesion sites, focal classification, radiographic findings, treatments, complications, and recurrence rates were reviewed. Results: Twenty patients had unifocal or multifocal LCH pelvic lesions (11 males, nine females). The median age at diagnosis was 3.5 years (0.8-21.6). Eight cases (40%) involved unifocal lesions, and twelve (60%) involved multifocal lesions, with the most common associated skeletal disease occurring at the ilium. 100% of cases had a lytic bone lesion with no pathologic fractures. All cases were treated nonoperatively with chemotherapy medications, corticosteroids, or observation alone. 75% of cases were treated with chemotherapy with a 100% resolution rate. The median length of follow-up was 4.5 years (0.4-16.7). Conclusion: Our study found that chemotherapy alone or chemotherapy with corticosteroid supplementation are appropriate options for unifocal pelvic LCH lesions. In contrast, pelvic lesions that are part of a multifocal presentation may be managed adequately with varied chemotherapy regimens. Corticosteroid therapy and observation alone may also be reasonable for a single organ system, multifocal, skeletal lesions that are anatomically accessible for biopsy and small in number or size.

Nandalur KR (2022). "Hepatic mucinous cystic neoplasm: A step forward towards a meaningful classification system." *Academic Radiology* 29(8): 1157-1158.

[Full Text](#)

Department of Diagnostic Radiology and Molecular Imaging

Ngo HG, Dandu C, Gibney BL and **Kuang SY** (2022). "Six logical steps that connect the introduction of the Nernst equation to its clinical application." *Advances in Physiology Education* 46(4): 540-543.

[Full Text](#)

Department of Foundational Medical Studies (OU)

The Nernst equation is key to understanding the electrophysiology of the cell membrane and the pathophysiology of K⁺ imbalances (i.e., hyperkalemia and hypokalemia). However, in our experience teaching medical students over the years, many students struggle to make connections between a brief introduction of the Nernst equation and its clinical application to K⁺ imbalances. This article aims to connect the introduction of the equation to its clinical application to understand K⁺ imbalances using six logical steps with detailed visual illustrations that make the connection explicit and cohesive. In addition, we highlight a few common areas related to the six steps that are often overlooked by both teachers and students. Students who are able to thoroughly demonstrate an understanding of all the six steps highlighted in this article will achieve mastery of this topic. **NEW & NOTEWORTHY** This article fills the gaps in teaching about the Nernst equation, which is important in medical physiology. Six logical steps are presented that connect the introduction of the equation to its clinical applications to hyperkalemia and hypokalemia, two conditions that can be life-threatening if left untreated. Only when students know how to apply the equation will their learning transition from surface to mastery.

Noorani B, **Cucullo L**, Ahn Y, Kadry H, Bhalerao A, Raut S, Nozohouri E and Chowdhury EA (2022). "Advanced microfluidic vascularized tissues as platform for the study of human diseases and drug development." *Current Neuropharmacology*. ePub Ahead of Print.

[Request Form](#)

Department of Foundational Medical Studies (OU)

The vascular system plays a critical role in human physiology and diseases. It is a complex subject to study using in vitro models due to its dynamic and three-dimensional microenvironment. Microfluidic technology has recently become a popular technology in

various biological fields for its advantages in mimicking complex microenvironments to an extent not achievable by more conventional platforms. Microfluidic technologies can reproduce different vascular system-related structures and functions that can be utilized for drug development and human diseases studies. Herein we first review the relevant structural and functional vascular biology systems of various organ systems and then the fabrication methods to reproduce these vascular districts. We provide a thorough review of the latest achievement in vascular organ-on-chip modeling specific to lung, heart, and the brain microvasculature for drug screening and the study of human disorders.

Oberleitner LMS, Lucia VC, Navin MC, Ozdych M, Afonso NM, Kennedy RH, Keil H, Wu LC and Mathew TA (2022). "COVID-19 vaccination concerns and reasons for acceptance among us health care personnel." Public Health Reports. ePub Ahead of Print.

[Request Form](#)

Department of Foundational Medical Studies (OU)

Department of Internal Medicine/Infectious Disease

Objectives: Because health care personnel (HCP) are potentially at increased risk of contracting COVID-19, high vaccination rates in this population are essential. The objective of this study was to assess vaccination status, barriers to vaccination, reasons for vaccine acceptance, and concerns about COVID-19 vaccination among HCP. **Methods:** We conducted an anonymous online survey at a large US health care system from April 9 through May 4, 2021, to assess COVID-19 vaccination status and endorsement of reasons for acceptance and concerns related to vaccination (based on selections from a provided list). **Results:** A total of 4603 HCP (12.2% response rate) completed the survey, 3947 (85.7%) had received at least 1 dose of a COVID-19 vaccine at the time of the survey, and 550 (11.9%) reported no plans to receive the vaccine. Unvaccinated HCP were 30 times more likely than vaccinated HCP to endorse religious or personal beliefs as a vaccine concern (odds ratio = 30.95; 95% CI, 21.06-45.48) and 15 times more likely to believe that personal vaccination is not needed if enough others are vaccinated (odds ratio = 14.99; 95% CI, 10.84-20.72). The more reasons endorsed for vaccination ($ss = 0.60$; $P < .001$), the higher the likelihood of having received the vaccine. However, the number of concerns about COVID-19 vaccine was not related to vaccination status ($ss = 1.01$; $P = .64$). **Conclusions:** Our findings suggest that reasons for vaccination acceptance and concerns about vaccination need to be considered to better understand behavioral choices related to COVID-19 vaccination among HCP, because these beliefs may affect vaccination advocacy, responses to vaccine mandates, and promotion of COVID-19 vaccine boosters.

Oliveira S, Andrade R, Valente C, Espregueira-Mendes J, Silva F, Hinckel BB, Carvalho O and Leal A (2022). "Mechanical-based therapies may reduce pain and disability in some patients with knee osteoarthritis: A systematic review with meta-analysis." Knee 37: 28-46.

[Full Text](#)

Department of Orthopaedic Surgery

Background: Mechanical-based therapies are not yet recommended to manage osteoarthritis (OA). This systematic review and meta-analysis aim to assess the effects of passive mechanical-based therapies (isolated or combined with other therapies) on patients with knee OA compared to placebo, other isolated or combined interventions. **Methods:** Pubmed, Cochrane, Web of Science and EMBASE were searched up to December 2020. We included randomized and non-randomized trials using therapeutic ultrasound, phonophoresis, extracorporeal shockwave therapy (ESWT) and vibration (single or combined with other therapies) compared to placebo, and/or other physical therapies groups. Biochemical, patient-reported, physical and

imaging outcome measures were retrieved. We judged risk of bias using the RoB2 tool for randomized studies, the ROBINS-I tool for non-randomized studies, and the GRADE to interpret certainty of results. Results: We included 77 clinical studies. Ultrasound and ESWT statistically improved pain and disability comparing to placebo (combined or not with other therapies), and when added to other therapies versus other therapies alone. Ultrasound was statistically inferior to phonophoresis (combined or not with other therapies) in reducing pain and disability for specific therapeutic gels and/or combined therapies. Vibration plus exercise statistically improved pain relief and function versus exercise alone. All meta-analyses showed very low certainty of evidence, with 15 of 42 (38%) pooled comparisons being statistically significant (weak to large effect).

Olmsted ZT, Petersen EA, Pilitsis JG, Rahimi SY, Chen PR, Savitz SI, Laskowitz DT, Kolls BJ and **Staudt MD** (2022). "Toward generalizable trajectory planning for human intracerebral trials and therapy." Stereotactic and Functional Neurosurgery 100(4): 214-223.

[Request Form](#)

Department of Neurosurgery

Omari A, Carniciu AL, Desai M, Schimmel O, Schlachter DM, **Folberg R** and **Kahana A** (2022). "Globe dislocation and optic nerve avulsion following all-terrain vehicle accidents." American Journal of Ophthalmology Case Reports 27: 101621.

[Full Text](#)

Department of Ophthalmology

Purpose: Open-air motor vehicles present unique trauma risks to the eyes and face. We describe two patients who suffered a crash while riding an all-terrain vehicle (ATV), leading to globe dislocation with optic nerve avulsion in order to raise awareness about the risks associated with ATV accidents. Observations: In both cases, the injury was caused by high-speed trauma to the orbit involving a tree branch. One patient sustained a life threatening arrhythmia requiring a short stay in the intensive care unit, and both patients required emergent surgical management and eventual socket reconstruction. Conclusions and Importance: These cases highlight the need for greater advocacy on behalf of rider safety. The authors encourage ophthalmologists to counsel patients who use ATVs to wear helmets, seatbelts, and protective eyewear to prevent these types of injuries in the future.

Park KH, Rosas US, Liu QY, **Jamil LH**, Gupta K, Gaddam S, Nissen N, Thompson CC and Lo SK (2022). "Safety of teaching endoscopic ultrasound-guided gastroenterostomy (EUS-GE) can be improved with standardization of the technique." Endoscopy International Open 10(8): E1088-E1094.

[Full Text](#)

Department of Internal Medicine/Gastroenterology

Background and Study Aims: Endoscopic ultrasound guided gastroenterostomy (EUS-GE) is a novel technique developed to manage gastric outlet obstruction (GOO). It involves creating a fistula between the stomach and the proximal small bowel using an electric cautery-enhanced lumen-apposing metal stent (ECE-AMS) with EUS guidance. We aimed to publish our experience in improving teaching of this technique to practicing endoscopists with a wide range of experience by comparing the outcomes before and after standardization of procedural steps. Methods: All EUS-GEs performed for inoperable GOO at a single institution from 2014 to 2021 were retrospectively analyzed. The technique was taught by one experienced endoscopist with prior expertise. Five advanced endoscopists with prior EUS and ECE-LAMS placement experience participated. The impact of standardization on outcomes (clinical and technical success, length

of stay [LOS], procedure time, and adverse events [AEs]) was compared. Results: A total 41 EUS-GEs were performed (5 before and 36 after standardization) by endoscopists with practice experience ranging from 2 to 13 years. The patient population was similar in age and sex. Standardization was associated with significantly higher rates of technical success (100 % vs 60%, P = 0.01) and lower peri-procedural AEs (2.8 % vs 40%, P = 0.03). Two AEs in the pre-standardized group were gastric perforation and gastrocolic fistula creation. One AE in the post-standardized group was gastric perforation. Procedure time, clinical success, and LOS showed improvement, although it was not statistically significant. Conclusions: Teaching EUS-GE after standardizing the procedure was associated with a significant increase in technical success and a decrease in AEs irrespective of prior total experiences.

Parker KSS, Hammoud MM, Winkel AF, Marzano D, Frank S, **Franz P** and Morgan HK (2022).

"Distributions of residency interviews with the implementation of virtual interviews and standardization of interview offer dates." Journal of Surgical Education 79(5): 1105-1112.

[Full Text](#)

Department of Obstetrics & Gynecology

Objective: Virtual interviews were widely implemented alongside many other changes in the 2021 residency application process. We investigated how these many interventions may have influenced interview distributions and completions. Design: Cross-sectional survey distributed electronically to obstetrics and gynecology (OBGYN) residency applicants in February 2021. Distributions of interview invitations, interviews completed, and percent of interview offers completed were compared to the previous application cycle. The odds ratios of receiving interviews were calculated based on applicant characteristics including test scores, number of applications, and race/ethnicity. Setting: All OBGYN residency applicants registered through the Electronic Residency Application Service. Participants: The 915 (36%) of 2577 total OBGYN applicants who responded to the survey. Results: US allopathic medical students received fewer interview offers in 2021 (median 13 [interquartile range 9-19]) compared to 2020 (median 15 [interquartile range 11-20]). There was no difference in the absolute numbers of interviews completed. A United States Medical Licensing Exam Step 1 score ≥ 221 resulted in more than a five-fold increase in adjusted odds of receiving at least 12 interviews for allopathic students. Black or African American US allopathic seniors had a 2.3 odds ratio for receiving at least 12 interview invitations compared to White non-Hispanic or Latino US allopathic seniors, adjusted for Step 1 score and the number of programs applied to. Interview offers released on standardized dates had a mitigating effect on completing more interviews among allopathic seniors with at least 12 interview invitations. Conclusions: Virtual interviews did not change the overall number of interviews completed. Standardization of interview offer dates mitigated excessive virtual interviewing, yet additional measures are needed to curb interview inflation and the effects on interview distributions.

Patel AD, D'Cruz R, Olson J, Lucas M, Baron CM, **Novotny NM**, Zamora IJ and Lovvorn Iii HN (2022).

"Endoluminal silicone-covered stenting in children: Novel applications and lessons learned." American Surgeon 88(7): 1557-1560.

[Request Form](#)

Department of Surgery

Background: Silicone-covered endoluminal stents have been applied to various hollow visceral disorders in adult patients with varying success. Efficacy of retrievable endoluminal stenting in children is less well-established. Purpose: The purpose of this study was to evaluate our experience with evolving applications of endoluminal silicone-covered stenting in children.

Research Design: Eight children 19 years and younger having silicone-covered stent placement for various indications at a single institution (2014-2021) were reviewed retrospectively. Results: Eight patients received a total of 26 silicone-covered stents. Four stent placements (15.4%) were associated with a direct adverse event. To resolve the endoluminal disorder, four patients received multiple stents or further intervention. When evaluating novel applications, clinical benefit was noted for one patient with vaginal atresia, and another after ileal pouch anal anastomosis disruption. Conclusion: This experience highlights the broad and innovative applications for endoluminal silicone-covered natural orifice stenting in children. Acute processes respond well and rapidly to stenting, although chronic, established fistula may require additional manipulations or surgery.

Patel N, Faldu P, Fayed M, Milad H and **Nagaraju P** (2022). "Chronic pelvic pain, quality of life, and patient satisfaction after robotic sacrocolpopexy for pelvic organ prolapse." *Cureus* 14(8): e28095.

[Full Text](#)

Department of Urology

Background and Objective: When evaluating repair outcomes in robotic sacrocolpopexy (RSC) for the treatment of pelvic organ prolapse (POP), it has become evident that surgeons usually focus on anatomical improvements and neglect equally important parameters of patient satisfaction and quality of life (QoL). Investigating these factors would aid in achieving a more patient-centered approach to treatment. This study aimed to examine QoL and satisfaction outcomes in women after RSC. **Methods:** This study analyzed self-reported patient data regarding RSC for POP performed between October 2009 and February 2017 by fellowship-trained urologists in female pelvic medicine and reconstructive surgery. These patients participated in a survey to assess overall satisfaction and QoL, as well as contributing factors, such as changes in bladder and bowel function, vaginal bulge, and vaginal pain on a 7-point Likert scale (ranging from markedly worse to markedly improved). Data were examined using multivariate regression analysis. Positive treatment response was defined as scores of 6 or 7, whereas negative response was defined as scores of 1 to 5. **Results:** The response rate was 41% (156/380), and the median age of the participants was 70 years [interquartile range (IQR): 63, 73]. Of note, 98.7% were Caucasian, with 73% currently in a significant relationship. The median duration since RSC was 2.12 years (IQR: 1.2, 3.7). Overall, 93 (66.9%), patients (23.0%), and 123 patients (88.5%) had a positive treatment response for bladder function, bowel function, and vaginal bulge, respectively. Furthermore, 66% of women had improved QoL, 84% reported improved overall satisfaction, and 91.4% stated that they would recommend RSC to a friend. After controlling for significant covariates, results of a multivariate analysis demonstrated positive treatment response for bladder function [odds ratio (OR): 14.6; $p < 0.0001$], bowel function (OR: 9.72; $p = 0.003$), and vaginal bulge (OR: 41.7; $p < 0.0001$), significantly associated with increased odds of having improved QoL, whereas positive treatment response for vaginal bulge (OR: 26.9; $p = 0.023$) and recommending RSC to a friend (OR: 175; $p = 0.0009$) were associated with positive overall satisfaction. **Conclusions:** Our findings endorse using RSC surgery for patients with POP based on both QoL improvement and overall post-procedure satisfaction perspective. This study may help encourage surgeons and clinicians to employ a surgical modality that incorporates each patient's unique treatment desires and goals and provide patients with realistic post-procedure goals and expectations regarding treatment.

Patel SA, Ma TM, Wong JK, Stish BJ, Dess RT, Pilar A, Reddy C, Wedde TB, Lilleby WA, Fiano R, Merrick GS, Stock RG, Demanes DJ, Moran BJ, Tran PT, **Krauss DJ**, Abu-Isa EI, Pisansky TM, Choo CR, Song DY, Greco S, Deville C, DeWeese TL, Tilki D, Ciezki JP, Karnes RJ, Nickols NG, Rettig MB, Feng FY, Berlin A,

Tward JD, Davis BJ, Reiter RE, Boutros PC, Romero T, Horwitz EM, Tendulkar RD, Steinberg ML, Spratt DE, Xiang M and Kishan AU (2022). "External beam radiotherapy with or without brachytherapy boost in men with very high-risk prostate cancer: A large multicenter international consortium analysis." *International Journal of Radiation Oncology Biology Physics*. ePub Ahead of Print.

[Full Text](#)

Department of Radiation Oncology

Purpose: Very high-risk (VHR) prostate cancer (PC) is an aggressive subgroup with high risk of distant disease progression, and systemic treatment intensification with abiraterone or docetaxel reduces PC-specific mortality (PCSM) and distant metastasis (DM) in men receiving external beam radiotherapy (EBRT) with androgen deprivation therapy (ADT). Whether prostate-directed treatment intensification with addition of brachytherapy (BT) boost to EBRT with ADT improves outcomes in this group is unclear. Methods and Materials: This cohort study from 16 centers across four countries included men with VHR PC treated with (i) dose-escalated EBRT with ≥ 24 months of ADT or (ii) EBRT+BT boost with ≥ 12 months of ADT. VHR was defined by National Comprehensive Cancer Network (NCCN) criteria (clinical T3b-4, primary Gleason pattern 5, or ≥ 2 NCCN high-risk features), and results were corroborated in a subgroup of men who met STAMPEDE trials inclusion criteria (≥ 2 of following: clinical T3-4, Gleason 8-10, or PSA ≥ 40 ng/mL). PCSM and DM between EBRT and EBRT+BT were compared using inverse probability of treatment weight-adjusted Fine-Gray competing risk regression. Results: Amongst the entire cohort, 270 underwent EBRT and 101 EBRT+BT. After a median follow-up of 7.8 years, 6.7% and 5.9% of men died of PC and 16.3% and 9.9% had DM after EBRT and EBRT+BT, respectively. There was no significant difference in PCSM (sHR, 1.47 [95% CI, 0.57-3.75]; $P=.42$) or DM (sHR, 0.72, [95% CI, 0.30-1.71]; $P=.45$) between EBRT+BT and EBRT. Results were similar within the STAMPEDE-defined VHR subgroup (PCSM: sHR, 1.67 [95% CI, 0.48-5.81]; $P=.42$; DM: sHR, 0.56 [95% CI, 0.15-2.04]; $P=.38$). Conclusions: In this VHR PC cohort, no difference in clinically meaningful outcomes was observed between EBRT alone with ≥ 24 months of ADT compared with EBRT+BT with ≥ 12 months of ADT. Comparative analyses in men treated with intensified systemic therapy are warranted.

Patel V, Metz A, Schultz L, Nerenz D, Park P, Chang V, Schwalb J, **Khalil J**, **Perez-Cruet M** and Aleem I (2022). "Rates and reasons for reoperation within 30 and 90 days following cervical spine surgery: A retrospective cohort analysis of the Michigan Spine Surgery Improvement Collaborative (MSSIC) registry." *Spine Journal*. ePub Ahead of Print.

[Request Form](#)

Department of Orthopaedic Surgery

Department of Neurosurgery

Background Context: Reoperation following cervical spinal surgery negatively impacts patient outcomes and increases healthcare system burden. To date, most studies have evaluated reoperations within 30 days after spine surgery and have been limited in scope and focus. Evaluation within the 90-day period, however, allows a more comprehensive assessment of factors associated with reoperation. Purpose: The purpose of this study is to assess the rates and reasons for reoperations after cervical spine surgery within 30 and 90 days. Design: We performed a retrospective analysis of a state-wide prospective, multi-center, spine-specific database of patients surgically treated for degenerative disease. Patient Sample: Patients 18 years of age or older who underwent cervical spine surgery for degenerative pathologies from February 2014 to May 2019. Operative criteria included all degenerative cervical spine procedures, including those with cervical fusions with contiguous extension down to T3. Outcome Measures: We determined causes for reoperation and independent surgical and

demographic risk factors impacting reoperation. Methods: Patient-specific and surgery-specific data was extracted from the registry using ICD-10-DM codes. Reoperations data was obtained through abstraction of medical records through 90 days. Univariate analysis was done using chi-square tests for categorical variables, t-tests for normally distributed variables, and Wilcoxon rank-sum tests for variables with skewed distributions. Odds ratios for return to the operating room (OR) were evaluated in multivariate analysis. Results: A total of 13435 and 13440 patients underwent cervical spine surgery and were included in the 30 and 90-day analysis, respectively. The overall reoperation rate was 1.24% and 3.30% within 30 and 90 days, respectively. Multivariate analysis showed within 30 days, procedures involving four or more levels, posterior only approach, and longer length of stay had increased odds of returning to the OR ($p < 0.05$), whereas private insurance had a decreased odds of return to OR ($p < 0.05$). Within 90 days, male sex, coronary artery disease (CAD), previous spine surgery, procedures with 4 or more levels, and longer length of stay had significantly increased odds of returning to the OR ($p < 0.05$). Non-white race, independent ambulatory status pre-operatively, and having private insurance had decreased odds of return to the OR ($p < 0.05$). The most common specified reasons for return to the OR within 30 days was hematoma (19%), infection (17%), and wound dehiscence (11%). Within 90 days, reoperation reasons were pain (10%), infection (9%), and hematoma (8%). Conclusion: Reoperation rates after elective cervical spine surgery are 1.24% and 3.30% within 30 and 90 days, respectively. Within 30 days, four or more levels, posterior approach, and longer length of stay were risk factors for reoperation. Within 90 days, male sex, CAD, four or more levels, and longer length of hospital stay were risk factors for reoperation. Non-white demographic and independent preoperative ambulatory status were associated with decreased reoperation rates.

Pestano C, **Easton RW**, Lipphardt M, **Easton M**, Chen N-W, **Papakonstantinou NS**, **Ahlgren B** and Vibert B (2022). "P46. TXA vs no TXA: Tranexamic acid in lumbar fusion, a retrospective study comparison." *Spine Journal* 22(9): S148-S148.

[Full Text](#)

Department of Orthopaedic Surgery

Pfennig M, **Lee A** and **Mi M** (2022). "How does telementoring impact medical education within the surgical field? A scoping review." *American Journal of Surgery* 224(3): 869-880.

[Full Text](#)

OUWB Medical Student Author

Department of Foundational Medical Studies (OU)

Background: Surgical education strongly involves the use of mentorship to improve the confidence and efficiency of trainees. Social distancing due to the COVID-19 pandemic may serve as a catalyst to promote the use of telementoring and other remote learning opportunities in medical education. Methods: A comprehensive literature review was performed using the electronic databases PubMed, Embase, Web of Science, Scopus, and the Cochrane Library with respect to telementoring in the surgical field. Results: The overall consensus of telementoring experience among all 25 studies was generally positive, citing "positive experience," "increased confidence," and "increased surgical skill." Using over 15 different technologies, a total of 12 simulations, 149 tasks, and 491 surgeries were conducted via telementoring. Eight mentor-mentee relationships were identified, with the most common relationship being surgeon-to-surgeon in 12 studies. Conclusions: The implementation of telementoring has been shown to be effective in improving surgical skills and learner experiences while overcoming financial and geographical barriers.

Pibarot P, Herrmann HC, Wu C, Hahn RT, Otto CM, **Abbas AE**, Chambers J, Dweck MR, Leipsic JA, Simonato M, Rogers T, Sathananthan J, Guerrero M, Ternacle J, Wijeyesundera HC, Sondergaard L, Barbanti M, Salaun E, Génèreux P, Kaneko T, Landes U, Wood DA, Deeb GM, Sellers SL, Lewis J, Madhavan M, Gillam L, Reardon M, Bleiziffer S, O'Gara PT, Rodés-Cabau J, Grayburn PA, Lancellotti P, Thourani VH, Bax JJ, Mack MJ and Leon MB (2022). "Standardized definitions for bioprosthetic valve dysfunction following aortic or mitral valve replacement: JACC state-of-the-art review." Journal of the American College of Cardiology 80(5): 545-561.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Bioprosthetic valve dysfunction (BVD) and bioprosthetic valve failure (BVF) may be caused by structural or nonstructural valve dysfunction. Both surgical and transcatheter bioprosthetic valves have limited durability because of structural valve deterioration. The main objective of this summary of experts participating in a virtual workshop was to propose standardized definitions for nonstructural and structural BVD and BVF following aortic or mitral biological valve replacement with the goal of facilitating research reporting and implementation of these terms in clinical practice. Definitions of structural BVF, based on valve reintervention or death, underestimate the true incidence of BVF. However, definitions solely based on the presence of high transprosthetic gradient at a given echocardiogram during follow-up overestimate the incidence of structural BVD and BVF. Definitions of aortic or mitral structural BVD must therefore include the confirmation by imaging of permanent structural changes to the leaflets alongside evidence of deterioration in valve hemodynamic function at echocardiography follow-up.

Puzyrenko A, **Wang D**, Schneider R, Wallace G, Schreiber S, Brandt K and Gunsolus IL (2022). "Urine drug screening in the era of designer benzodiazepines: Comparison of three immunoassay platforms, LC-QTOF-MS and LC-MS-MS." Journal of analytical toxicology 46(7): 712-718.

[Full Text](#)

Department of Pathology

This study investigated the presence of designer benzodiazepines in 35 urine specimens obtained from emergency department patients undergoing urine drug screening. All specimens showed apparent false-positive benzodiazepine screening results (i.e., confirmatory testing using a 19-component liquid chromatography-tandem mass spectrometry (LC-MS-MS) panel showed no prescribed benzodiazepines at detectable levels). The primary aims were to identify the possible presence of designer benzodiazepines, characterize the reactivity of commercially available screening immunoassays with designer benzodiazepines and evaluate the risk of inappropriately ruling out designer benzodiazepine use when utilizing common urine drug screening and confirmatory tests. Specimens were obtained from emergency departments of a single US Health system. Following clinically ordered drug screening using Abbott ARCHITECT c assays and laboratory-developed LC-MS-MS confirmatory testing, additional characterization was performed for investigative purposes. Specifically, urine specimens were screened using two additional assays (Roche cobas c502 and Siemens Dimension Vista) and LC-quadrupole time-of-flight mass spectrometry (LC-QTOF-MS) to identify presumptively positive species, including benzodiazepines and non-benzodiazepines. Finally, targeted, qualitative LC-MS-MS was performed to confirm the presence of 12 designer benzodiazepines. Following benzodiazepine detection using the Abbott ARCHITECT, benzodiazepines were subsequently detected in 28/35 and 35/35 urine specimens using Siemens and Roche assays, respectively. LC-QTOF-MS showed the presumptive presence of at least one non-Food and Drug Administration

(FDA)-approved benzodiazepine in 30/35 specimens: flubromazolam (12/35), flualprazolam (11/35), flubromazepam (2/35), clonazolam (4/35), etizolam (9/35), metizolam (5/35), nitrazepam (1/35) and pyrazolam (1/35). Two or three designer benzodiazepines were detected concurrently in 13/35 specimens. Qualitative LC-MS-MS confirmed the presence of at least one designer benzodiazepine or metabolite in 23/35 specimens, with three specimens unavailable for confirmatory testing. Urine benzodiazepine screening assays from three manufacturers were cross-reactive with multiple non-US FDA-approved benzodiazepines. Clinical and forensic toxicology laboratories using traditionally designed LC-MS-MS panels may fail to confirm the presence of non-US FDA-approved benzodiazepines detected by screening assays, risking inappropriate interpretation of screening results as false positives.

Qin A, Chen SP, Liang J, Snyder M and **Yan D** (2022). "Evaluation of DIR schemes on tumor/organ with progressive shrinkage: Accuracy of tumor/organ internal tissue tracking during the radiation treatment." *Radiotherapy and Oncology* 173: 170-178.

[Full Text](#)

Department of Radiation Oncology

Purpose: Accuracy of intratumoral treatment dose accumulation and response assessment highly depends on the accuracy of a DIR method. However, achievable accuracy of the existing DIR methods for tumor/organ with large and progressive shrinkage during the radiotherapy course have not been explored. This study aimed to use a bio-tissue phantom to quantify the achievable accuracy of different DIR schemes. Materials/Methods: A fresh porcine liver was used for phantom material. Sixty gold markers were implanted on the surface and inside of the liver. To simulate the progressive radiation-induced tumor/organ shrinkage, the phantom was heated using a microwave oven incrementally from 30 s to 200 s in 8 phases. For each phase, the phantom was scanned by CT. Two extra image sets were generated from the original images: 1) the image set with overriding the high-density gold markers (feature image); 2) the image set with overriding the entire phantom to the mean soft tissue intensity (featureless image). Ten DIR schemes were evaluated to mimic clinical treatment situations of tumor/critical organ with respect to their surface and internal condition of image features, availability of intermediate feedback images and DIR methods. The internal marker's positions were utilized to evaluate DIR accuracy quantified by target registration error (TRE). Results: Volume reduction was about 20 % to 40 % of the initial volume after 90 s - 200 s of the heating. Without image features on the surface and inside of the phantom, the hybrid-DIR (image-based DIR followed by biomechanical model-based refinement) with the surface constraint achieved the registration TRE from 2.6 +/- 1.2 mm to 5.3 +/- 2.6 mm proportional to the %volume shrinkage. Meanwhile, the hybridDIR with the surface-marker constraint achieved the TRE from 2.4 +/- 1.2 mm to 2.6 +/- 1.0 mm. If both the surface and internal image features would be viable on the feedback images, the achievable accuracy could be minimal with the TRE from 1.6 +/- 0.9 mm to 1.9 +/- 1.2 mm. Conclusions: Standard DIR methods cannot guarantee intratumoral tissue registration accuracy for tumor/organ with large progressive shrinkage. Achievable accuracy with using the hybrid DIR method is highly dependent on the surface registration accuracy. If the surface registration mean TRE can be controlled within 2 mm, the mean TRE of internal tissue can be controlled within 3 mm. (c) 2022 The Author(s). Published by Elsevier B.V. *Radiotherapy and Oncology* 173 (2022) 170-178

Radhakrishnan A, Wallner LP, Skolarus TA, George AK, **Rosenberg BH**, Abrahamse P and Hawley ST (2022). "Exploring variation in the receipt of recommended active surveillance for men with favorable-risk prostate cancer." *Journal of Urology* 208(3): 600-607.

[Full Text](#)

Department of Urology

Purpose: Men on active surveillance for favorable-risk prostate cancer do not receive all the recommended testing. Reasons for variation in receipt are unknown. Materials and Methods: We combined prospective registry data from the Michigan Urological Surgery Improvement Collaborative, a collaborative of 46 academic and community urology practices across Michigan, with insurance claims from 2014 to 2018 for men on active surveillance for favorable-risk prostate cancer. We defined receipt of recommended surveillance according to the collaborative's low-intensity criteria as: annual prostate specific antigen testing and either magnetic resonance imaging or prostate biopsy every 3 years. We assessed receipt of recommended surveillance among men with ≥ 36 months of followup (246). We conducted multilevel analyses to examine the influence of the urologist, urologist and primary care provider visits, and patient demographic and clinical factors on variation in receipt. Results: During 3 years of active surveillance, just over half of men (56.5%) received all recommended surveillance testing (69.9% annual prostate specific antigen testing, 72.8% magnetic resonance imaging/biopsy). We found 19% of the variation in receipt was attributed to individual urologists. While increasing provider visits were not significantly associated with receipt, older men were less likely to receive magnetic resonance imaging/biopsy (≥ 75 vs <55 years, adjusted odds ratio 0.07; 95% confidence interval 0.01-0.81). Conclusions: Nearly half of men on active surveillance for favorable-risk prostate cancer did not receive all recommended surveillance. While urologists substantially influenced receipt of recommended testing, exploring how to leverage patients and their visits with their primary care providers to positively influence receipt appears warranted.

Randall DJ, Modersitzki NK, Vegunta S and Seay MD (2022). "Optic disc edema associated with ustekinumab therapy." Journal of Neuro-ophthalmology. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

Randall DJ, Zhang Y, Li HJ, Hubbard JC and Kazmers NH (2022). "Establishing the minimal clinically important difference and substantial clinical benefit for the pain visual analog scale in a postoperative hand surgery population." Journal of Hand Surgery-American Volume 47(7): 645-653.

[Full Text](#)

OUWB Medical Student Author

Purpose: Although the pain visual analog scale (VAS-pain) is a ubiquitous patient-reported outcome instrument, it remains unclear how to interpret changes or differences in scores. Therefore, our purpose was to calculate the minimal clinically important difference (MCID) and substantial clinical benefit (SCB) for the VAS-pain instrument in a nonshoulder hand and upper extremity postoperative population. Methods: Adult postoperative patients treated by 1 of 5 fellowship-trained orthopedic hand surgeons at a single tertiary academic medical center were identified. Inclusion required VAS-pain scores at baseline (up to 3 months before surgery) and follow-up (up to 4 months after surgery), in addition to a response to a pain-specific anchor question at follow-up. The MCID estimates were calculated with (1) the 1/2 standard deviation method; and (2) an anchor-based approach. The SCB estimates were calculated with (1) an anchor-based approach; and (2) a receiver operator curve method that maximized the sensitivity and specificity for detecting a "much improved" pain status. Results: There were 667 and 148 total patients included in the MCID and SCB analyses, respectively. The 1/2 standard deviation MCID estimate was 1.6, and the anchor-based estimate was 1.9. The anchor-based

SCB estimate was 2.2. The receiver operator curve analysis yielded an SCB estimate of 2.6, with an area under the curve of 0.72, consistent with acceptable discrimination. Conclusions: We propose MCID values in the range of 1.6 to 1.9 and SCB values in the range of 2.2 to 2.6 for the VAS-pain instrument in a nonshoulder hand and upper extremity postoperative population.

Raskin J, Borrelli M, Nasrollahi T and Chen H (2022). "Rhinoplasty complication requiring multiple revisions." Ear, Nose and Throat Journal. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

Cosmetic rhinoplasties are complex surgical procedures that can present with serious complications requiring revision surgeries. Septal graft difficulties are common complications in rhinoplasties, requiring surgeon awareness of the potential future need for corrective surgery. Here, we report a case of multiple revision cosmetic rhinoplasties due to recurrent complications. Additionally, a review of the literature regarding cosmetic rhinoplasty complications and risk factors was performed.

Raskin J, Borrelli M, Nasrollahi T and Heaton C (2022). "Tracheal rupture after tracheostomy tube exchange in a patient with recurrent oral cavity spindle cell carcinoma." Ear, Nose and Throat Journal. ePub Ahead of Print.

[Full Text](#)

OUWB Medical Student Author

Oral Cavity Spindle Cell Carcinoma (OCSCC) is a rare variant of squamous cell carcinoma involving the nasopharynx and oral mucosa. This tumor has a high propensity to invade local structures of the head and neck region, making surgical removal challenging and potentially morbid for the patient. Here, we report a case of OCSCC and the complications that were confronted during its surgical resection. Additionally, a review of the literature regarding OCSCC complications and their treatments was performed.

Reed DM, Toris C, Gilbert J, **Trese M**, Kristoff TJ, Fan S, Neely D, Ferguson S, Kazemi A, McLaren J, Gulati V, Musch DC, Sit AJ and Moroi SE (2022). "Eye Dynamics and Engineering Network (EDEN) Consortium: Baseline characteristics of a randomized trial in healthy adults." Ophthalmology. Glaucoma. ePub Ahead of Print.

[Full Text](#)

Department of Ophthalmology

Purpose: To improve understanding of intraocular pressure (IOP) and its variance, this project identifies systemic and ocular characteristics of healthy eyes of adult volunteers including IOP variation, ocular biometrics, and aqueous humor dynamics (AHD). These data serve as baseline controls for further studies from the Eye Dynamics and Engineering Network (EDEN) Consortium. Design: Multicenter open-label clinical trial in healthy adults randomized to one week treatment with two approved glaucoma drugs in a crossover design. Participants: Among 135 healthy participants, 122 participants (55.2 ± 8.8 y; 92 females, 30 males) completed the protocol. Methods: Participants from the University of Michigan, Mayo Clinic and University of Nebraska Medical Center underwent measurements of ocular biometrics, AHD, and IOP using four tonometers. IOP was measured during three study visits without glaucoma medications. The PhenX Toolkit survey was used to acquire standardized data on medical history, surgical history, medications, smoking and alcohol exposures, and physical measures. Main Outcome Measures: The variability of IOP measurements within eyes was assessed as visit-to-visit IOP variation, same day visit IOP variation, and same day visit positional IOP variation. The

concordance [or correlation] between eyes also were assessed. Results: Average positional change of > 4.7 mmHg was detected with a range of 0.5 - 11.0 mmHg. Pearson correlation of IOP between eyes within a visit was 0.87 (95% CI: 0.82, 0.91) for Goldmann applanation tonometry, 0.91 (0.88, 0.94) for Icare rebound tonometry, and 0.91 (0.88, 0.94) for pneumatonometry. There was a 4%-12% asymmetric fluctuation of 3 mmHg or more between eyes between visits using rebound tonometry, 9% with Goldmann applanation tonometry, and 3%-4% by pneumotonometry. The coefficient of variation between visits for the same eye ranged from 11.2%-12.9% for pneumatonometry, from 13.6%-17.4% for rebound tonometry, and 15.8%-16.2% for Goldmann applanation tonometry. Conclusions: The current study from the EDEN consortium describes measurement methods and data analyses with emphasis on IOP variability. Future papers will focus on changes in ocular biometrics and AHD with timolol or latanoprost treatment.

Rehman R, Shareef SJ, Mohammad TF, Potts G and Fahs F (2022). "Applying to dermatology residency without a home program: Advice to medical students in the COVID-19 pandemic and beyond." Clinics in Dermatology 40(5): 513-515.

[Full Text](#)

OUWB Medical Student Author

Reis-Dennis S and **Brummett AL** (2022). "Are conscientious objectors morally obligated to refer?" Journal of Medical Ethics 48(8): 547-550.

[Full Text](#)

Department of Foundational Medical Studies (OU)

In this paper, we argue that providers who conscientiously refuse to provide legal and professionally accepted medical care are not always morally required to refer their patients to willing providers. Indeed, we will argue that refusing to refer is morally admirable in certain instances. In making the case, we show that belief in a sweeping moral duty to refer depends on an implicit assumption that the procedures sanctioned by legal and professional norms are ethically permissible. Focusing on examples of female genital cutting, clitoridectomy and 'normalizing' surgery for children with intersex traits, we argue that this assumption is untenable and that providers are not morally required to refer when refusing to perform genuinely unethical procedures. The fact that acceptance of our thesis would force us to face the challenge of distinguishing between ethical and unethical medical practices is a virtue. This is the central task of medical ethics, and we must confront it rather than evade it.

Rodés-Cabau J, **Abbas AE**, Serra V, Vilalta V, Nombela-Franco L, Regueiro A, Al-Azizi KM, Iskander A, Conradi L, Forcillo J, Lilly S, Calabuig A, Fernandez-Nofrerias E, Mohammadi S, Panagides V, Pelletier-Beaumont E and Pibarot P (2022). "Balloon- vs self-expanding valve systems for failed small surgical aortic valve bioprostheses." Journal of the American College of Cardiology 80(7): 681-693.

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Department of Internal Medicine/Cardiovascular Disease

Background: Data comparing valve systems in the valve-in-valve transcatheter aortic valve replacement (ViV-TAVR) field have been obtained from retrospective studies. Objectives: The purpose of this study was to compare the hemodynamic results between the balloon-expandable valve (BEV) SAPIEN 3/ULTRA, Edwards Lifesciences) and self-expanding valve (SEV) Evolut (R/PRO/PRO+, Medtronic) in ViV-TAVR. Methods: Patients with a failed small (≤ 23 mm) surgical valve were randomized to receive a BEV or an SEV. The primary endpoint was valve hemodynamics (maximal/mean residual gradients, severe prosthesis patient mismatch [PPM]),

or moderate-severe aortic regurgitation) at 30 days as evaluated by Doppler echocardiography. Results: A total of 102 patients were randomized, and of these, 98 patients finally underwent a ViV-TAVR procedure (BEV: n = 46, SEV: n = 52). The procedure was successful in all cases, with no differences in clinical outcomes at 30 days between groups (no death or stroke events). Patients in the SEV group exhibited lower mean and maximal transvalvular gradient values (15 ± 8 mm Hg vs 23 ± 8 mm Hg; $P < 0.001$; 28 ± 16 mm Hg vs 40 ± 13 mm Hg, $P < 0.001$), and a tendency toward a lower rate of severe PPM (44% vs 64%; $P = 0.07$). There were no cases of moderate-severe aortic regurgitation. In total, 55 consecutive patients (SEV: n = 27; BEV: n = 28) underwent invasive valve hemodynamic evaluation during the procedure, with no differences in mean and peak transvalvular gradients between both groups ($P = 0.41$ and $P = 0.70$, respectively). Conclusions: In patients with small failed aortic bioprostheses, ViV-TAVR with an SEV was associated with improved valve hemodynamics as evaluated by echocardiography. There were no differences between groups in intraprocedural invasive valve hemodynamics and 30-day clinical outcomes (Comparison of the Balloon-Expandable Edwards Valve and Self-Expandable CoreValve Evolut R or Evolut PRO System for the Treatment of Small, Severely Dysfunctional Surgical Aortic Bioprostheses. The 'LYTEN' Trial; NCT03520101)

Rubin C, Skelsey M, Clarke L, Rock J, Jansen B, Arnold T and Wood J (2022). "176 a non-invasive genomic assay for pigmented lesions to rule out primary cutaneous melanoma: Interim analysis of a national registry database." *Journal of Investigative Dermatology* 142(8): S30.

[Request Form](#)

Department of Internal Medicine/Dermatology

Purpose: A non-invasive genomic test that detects over-expression of PRAME and/or LINC00518 RNA has been shown to rule out melanoma in uncertain pigmented lesions with a negative predictive value of >99%. Detection of TERT promoter mutations (TERTpm) was recently shown to further enhance the assay's sensitivity, and TERTpm analysis is now offered as an optional add-on to the assay when sufficient DNA is present. A clinical registry was initiated to better characterize TERTpm analysis and its effect on test performance. Materials and Methods: An interim analysis was initiated when registry enrollment reached approximately 50%. All lesions with positive test results (abnormalities of PRAME, LINC00518, and / or TERTpm) were identified and test results were compared to the histopathologic diagnoses within submitted pathology reports. Results: Between April to December 2021, the registry enrolled 4244 lesions tested at 59 different clinical sites from across the United States. Analysis of TERTpm was requested in 2761 (65%). 51/2761 (1.9%) were positive for TERTpm, sixteen of which (16/2761; 0.9%) were also positive for LINC and PRAME over-expression. Corresponding pathology reports were available for 15/16 'triple-positive' cases and showed that eleven were diagnosed as melanoma (5 in situ and 6 invasive, thickness range 0.3mm - 0.9mm), two as dysplastic nevi with moderate-to-severe atypia, one as a pigmented basal cell carcinoma, and one as a seborrheic keratosis. Conclusions: Of 16 lesions positive for the 3 genomic abnormalities detected non-invasively by the assay, subsequent biopsies confirmed that 14 were either malignant or high-risk lesions, indicating the high specificity of the test result. Further analyses will be performed upon completion of registry enrollment in mid-2022.

Ruby AJ and Williams GA (2022). "Private equity in ophthalmology: Differences between present versus past." *Current Opinion in Ophthalmology* 33(5): 342-346.

[Full Text](#)

Department of Ophthalmology

Purpose of Review: The purpose of this review is to examine the differences between the

current private equity model in ophthalmology practices and the failed physician practice management companies (PPMC) of the 1990s. Recent Findings: Over the past 5 years, there has been an accelerating expansion of private equity into ophthalmology. In 2022, there are approximately 1400 ophthalmologists affiliated with one of over 30 private equity-controlled entities and further growth appears likely. This contrasts with the PPMC era that had only a few hundred ophthalmologists across a handful of companies and collapsed within 5 years. The reasons for the failure of PPMC model included inadequate capitalization, limited experience managing ophthalmology practices, failure to grow acquired ophthalmology practices, and misperceptions about the future of healthcare. Current private equity entities are characterized by substantial capital, longer term business plans predicated on individual practice growth, increasing market share, physician controlled clinical care, and integration of physicians into administration and governance. Summary: The current private equity model in ophthalmology continues to expand and presents a reasonable model for ophthalmologists considering a change in practice structure. Although distinctly different from the PPMC model, longer follow-up is required to determine the ultimate impact of private equity upon ophthalmology.

Ruiz ES, **Kus KJB**, Smile TD, Murad F, Zhou GH, Ilori EO, Schoenfeld JD, Margalit DN, Tishler RB, Vidimos AT, Koefman SA and Schmults CD (2022). "Adjuvant radiation following clear margin resection of high T-stage cutaneous squamous cell carcinoma halves the risk of local and locoregional recurrence: A dual-center." *Journal of the American Academy of Dermatology* 87(1): 87-94.

[Full Text](#)

OUWB Medical Student Author

Background: Although adjuvant radiation (ART) following clear margin surgery is recommended for select high-risk cutaneous squamous cell carcinomas, efficacy data are limited. Objective: To evaluate the impact of ART on outcomes following clear margin surgery for high T-stage cutaneous squamous cell carcinomas. Methods: A 20-year retrospective cohort study at 2 academic centers of high T-stage cutaneous squamous cell carcinomas (Brigham and Women's Hospital T2b or T3) with negative histologic margins post resection. Local recurrence (LR) and locoregional recurrence (LRR) were compared by whether tumors received ART or observation. Results: A total of 508 tumors were included, of which 96 underwent ART (ART(+)). ART(+) had a lower 5-year cumulative incidence of LR (ART(+), 3.6% [95% CI, 1.6%-7.7%] vs ART(-), 8.7% [95% CI, 6.3%-12.0%]) and LRR (ART(+), 7.5% [95% CI, 4.4%-11.9%] vs ART(-), 15.3% [95% CI, 11.9%-22.1%]). Recurrent tumors \geq 6 cm or Brigham and Women's Hospital T3 tumors were classified as high-risk due to a higher 5-year cumulative incidence of LRR (High-risk, 26.3% [95% CI, 19.0%-35.7%]). High-risk tumors treated with ART had a lower 5-year cumulative incidence of LRR (ART(+), 17.2% [95% CI, 11.9%-26.4%] vs ART(-), 31.0% [95% CI, 26.1%-40.8%]). Limitations: Retrospective design, heterogeneous population, variations in radiation protocols. Conclusion: ART following clear margin surgery for high T-stage cutaneous squamous cell carcinomas resulted in half the risk of LR and LRR.

Sargent T, Kolderman N, Nair GB, Jankowski M and **Al-Katib S** (2022). "Factors influencing the total procedure time of CT-guided percutaneous core-needle biopsies of lung nodules: A retrospective analysis." *Diagnostic & Interventional Radiology* 28(4): 337-343.

[Full Text](#)

OUWB Medical Student Author

Department of Diagnostic Radiology and Molecular Imaging

Department of Internal Medicine/Pulmonary & Critical Care Medicine

Purpose: This study aims to investigate the factors that influence total procedure time when

performing computed tomography (CT)-guided percutaneous core-needle lung biopsies. Methods: This is a cross-sectional study of 673 patients, who underwent a CT-guided percutaneous coreneedle biopsy at a tertiary care center from March 2014 to August 2016. Data on patient, nodule, and procedural factors and outcomes were collected retrospectively. Univariate linear regression and a multivariate stepwise linear regression were utilized for analysis. Results: Factors most strongly associated with prolonged procedure duration include 20-gauge needle use when compared with 18-gauge needle use (estimated difference in time=1.19), collecting additional core biopsies (estimated difference in time=1.10), decubitus nodule side up (DNSU; estimated difference in time=1.42), and supine positioning (estimated difference in time=1.16) relative to decubitus nodule side down positioning, and increased nodule distance from the skin surface (estimated difference in time=1.03). Increased nodule length (estimated difference in time=0.93) was associated with reductions in procedure duration. Prolonged procedure time was associated with an increased rate of pneumothorax (odds ratio (OR)=1.02; P < .0001) and decreased rate of pulmonary hemorrhage (OR=0.97; P < .0001). Conclusion: The use of 20-gauge biopsy needle, collecting additional core biopsies, DNSU and supine positioning, smaller nodule size, and increasing nodule distance from the skin surface were associated with increased procedure time for CT-guided core needle biopsies of lung nodules. Prolonged procedure time is associated with a higher rate of pneumothorax and a lower rate of pulmonary hemorrhage.

Sargent T, Kolderman N, Nair GB, Jankowski M and Al-Katib S (2022). "Risk factors for pneumothorax development following CT-guided core lung nodule biopsy." Journal of Bronchology and Interventional Pulmonology 29(3): 198-205.

[Full Text](#)

OUWB Medical Student Author

Department of Diagnostic Radiology and Molecular Imaging

Department of Internal Medicine/Pulmonary & Critical Care Medicine

Sasso RC, Boody B, Hu SS, Bae HW, Villavicencio AT, Lavelle WF, Kim KD, Yoon ST, Sandhu HS, **Perez-Cruet MJ**, Bains RS, Kuo CC, Stauff M, Gum JL, Deutsch H, Crandall DG, Fischgrund JS, Ray WZ, Yu E and Wang MY (2022). "207. FDA trial of decompression and dynamic sagittal tether for degenerative spondylolisthesis: 24 months clinical and radiographic follow-up." Spine Journal 22(9): S110-S110.

[Full Text](#)

Department of Neurosurgery

Seeley EA, Zimmer M and Berghea R (2022). "Suspected COVID-19 immunization-induced probable catastrophic antiphospholipid syndrome." Cureus 14(7): e27313.

[Full Text](#)

OUWB Medical Student Author

Department of Internal Medicine/Hospitalist Medicine

In this report, we describe the case of a woman with suspected COVID-19 immunization-induced probable catastrophic antiphospholipid syndrome. The patient is a 35-year-old female with a past medical history significant for antiphospholipid syndrome, not on anticoagulation, who presented with a 5-day history of abdominal pain and distention, nausea, vomiting, and shortness of breath. She had received her first dose of the Pfizer COVID-19 vaccine one day prior to the onset of symptoms. After extensive workup at an outside hospital, she was found to be in acute heart failure exacerbated by severe mitral and tricuspid regurgitation. She was transferred to our hospital for escalation of care. EKG showed evidence of prior inferior and septal

myocardial infarction. Transesophageal echocardiogram (TEE) showed reduced ejection fraction, severe mitral and tricuspid regurgitation, and a left ventricular thrombus. Cardiac MRI showed subendocardial late gadolinium enhancement indicative of ischemia. However, CTA of the coronary vessels showed no signs of obstruction. Therefore, her acute heart failure was thought to be due to small vessel thrombosis secondary to antiphospholipid syndrome. During admission, she had several absence seizure-like episodes. CT head showed several hypodensities of the deep white matter and brain MRI demonstrated multiple hyperintense T2 FLAIR signal foci with restriction diffusion and enhancement involving the cerebral hemisphere, consistent with subacute strokes attributed to being secondary to antiphospholipid syndrome or embolic from the left ventricular thrombus. She was treated with heparin for suspected catastrophic antiphospholipid syndrome and high-dose corticosteroid therapy for concomitant Systemic Lupus Erythematosus (SLE). She was discharged in a stable condition.

Seymour ZA, Daignault-Newton S, McLaughlin PW, Sandler H, Jackson W, Johnson SB, Miller D, Wei J, Sanda M and **Hamstra DA** (2022). "Patient reported outcomes for quality of life (QOL) by expanded prostate cancer index (EPIC) on average 15 years post treatment." Clinical and Translational Radiation Oncology 36: 56-62.

[Full Text](#)

Department of Radiation Oncology

Objective/Purpose: Previously patient reported quality of life (QOL) was reported in men with prostate cancer a mean 2 and 6 years post treatment with open radical prostatectomy (RP), 3D conformal radiation therapy (3D CRT), or 125I low dose rate (LDR) brachytherapy (BT). Herein we update the results 15 years post-treatment QOL. Materials/Methods: The Expanded Prostate Cancer Index (EPIC) domains were scored with differences evaluated at a median 15.8 years follow up based upon mean EPIC summary domains by ANOVA with pairwise post-hoc comparisons adjusted for age. Patient differences of current survey from first cross-section are reported as median change in summary score for each treatment group at median of 2.2 and 6.0, and 15.8 years. Results: Among men still alive response rate was 52% in BT, 60% in 3D CRT, and 62% in RP resulting in 30, 41, and 330 QOL questionnaires to evaluate for each corresponding modality at median follow up of 15.8 years. Men were a mean 75.3, 83.6, and 79.3 years of age after RP, 3DCRT, and BT, respectively. At a median of 15.8 years, there were largely persistent differences in EPIC domains without substantial evolution in QoL from middle time points. Persistent worsening in urinary irritative and bowel domain with 3DRT or BT compared to RP. Trend towards worse urinary incontinence with RP were noted without statistical differences within radiotherapy options. Conclusion: As the EPIC patient reported outcomes with the longest follow-up, these data uniquely reveal temporal trends from 2 to 15 years post treatment. However, the treatment modalities of open RP, 3D CRT without image guidance or intensity modulation, and BT without peripheral loading or MRI guidance may not reflect modern techniques.

Shajahan A and Pasquetto IV (2022). "Countering medical misinformation online and in the clinic." American Family Physician 106(2): 124-125.

[Full Text](#)

Department of Family Medicine and Community Health

Shareef S, **Rehman R**, Haque M and Silverberg JI (2022). "Lb895 readability, understandability, and actionability of online patient education materials for sunscreen." Journal of Investigative Dermatology 142(8): B8.

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OUWB Medical Student Author

Most adults in the United States obtain health information online. It is crucial that online patient education materials (PEMs) are easily interpreted in order to successfully impact patients' health behaviors. This is especially important for sunscreen PEMs, as proper use is associated with decreased risks of melanoma, non-melanoma skin cancers, and photoaging. American Medical Association recommends that PEMs be written at the sixth grade or lower reading level. We analyzed the readability of PEMs for sunscreen in order to identify opportunities to optimize PEMs. A Google search was performed using "sunscreen patient education." Reading level of PEMs was assessed via 10 validated formulas. Descriptive statistics were performed. Sixteen PEMs were identified. The average reading level was 8.2 (range: 6.4-10.9), which was above the recommended sixth grade reading level. Actionability domains that PEMs scored lowest on were lack of clear steps (n=3, 19%), visual aids (n=2, 13%), and tangible tools such as checklists (n=2, 13%). These results indicate that many online PEMs about sunscreens are not easily interpreted. Sunscreen PEMs should be improved by presenting the information at a lower reading level and taking steps to improve actionability.

Shimamura Y, Turk M, Qader MA, Shah ST, **Topf JM** and Hiremath S (2022). "Potassium-enriched salt to lower stroke risk: A #NephJC editorial on the SSaSS study." *Kidney Medicine* 4(7): 100489.

[Full Text](#)

Department of Internal Medicine/Nephrology

Sifat AE, Archie SR, Nozohouri S, Villalba H, Zhang Y, Sharma S, Ghanwatkar Y, Vaidya B, Mara D, **Cucullo L** and Abbruscato TJ (2022). "Short-term exposure to JUUL electronic cigarettes can worsen ischemic stroke outcome." *Fluids and Barriers of the CNS* 19(1): 74.

[Full Text](#)

Department of Foundational Medical Studies (OU)

Background: The short and long-term health effects of JUUL electronic cigarette (e-Cig) are largely unknown and warrant extensive research. We hypothesized that JUUL exposure could cause cerebrovascular toxicities impacting the progression and outcome of ischemic stroke comparable to tobacco smoke (TS) exposure. Methods: We exposed male C57 mice to TS/JUUL vapor for 14 days. LCMS/MS was used to measure brain and plasma nicotine and cotinine level. Transient middle cerebral artery occlusion (tMCAO) followed by reperfusion was used to mimic ischemic stroke. Plasma levels of IL-6 and thrombomodulin were assessed by enzyme-linked immunosorbent assay. At the same time, western blotting was used to study blood-brain barrier (BBB) tight junction (TJ) proteins expression and key inflammatory and oxidative stress markers. Results: tMCAO upregulated IL-6 and decreased plasma thrombomodulin levels. Post-ischemic brain injury following tMCAO was significantly worsened by JUUL/TS pre-exposure. TJ proteins expression was also downregulated by JUUL/TS pre-exposure after tMCAO. Like TS, exposure to JUUL downregulated the expression of the antioxidant Nrf2. ICAM-1 was upregulated in mice subjected to tMCAO following pre-exposure to TS or JUUL, with a greater effect of TS than JUUL. Conclusions: These results suggest that JUUL exposure could negatively impact the cerebrovascular system, although to a lesser extent than TS exposure.

Staudt MD (2022). "The multidisciplinary team in pain management." *Neurosurgery Clinics of North America* 33(3): 241-249.

[Full Text](#)

Department of Neurosurgery

Su AJ, Jiang N, Li B, Wang Y, Williamson WR, Owens C, Busquet N, **Khatter N**, Jani A, Huang C, Su WF and Washington K (2022). "Controlled drug release from peptide based bioconduits accelerate recovery after peripheral nerve injury and repair." Journal of the Peripheral Nervous System 27: S129-S130.

[Request Form](#)

OUWB Medical Student Author

Tanenbaum RE, Lobo R, **Kahana A** and Wester ST (2022). "Advances in magnetic resonance imaging of orbital disease." Canadian Journal of Ophthalmology 57(4): 217-227.

[Full Text](#)

Department of Ophthalmology

Magnetic resonance imaging (MRI) is increasingly used by the orbital surgeon to aid in the diagnosis, surgical planning, and monitoring of orbital disease. MRI provides superior soft tissue detail compared with computed tomography or ultrasound, and advancing techniques enhance its ability to highlight abnormal orbital pathology. Diffusion-weighted imaging is a specialized technique that uses water molecule diffusion patterns in tissue to generate contrast signals and can help distinguish malignant from benign lesions. Steady-state free precession sequences such as Constructive Interference in Steady-State (CISS) and Fast Imaging Employing Steady-state Acquisition (FIESTA) generate highly detailed, 3-dimensional reconstructed images and are particularly useful in distinguishing structures adjacent to cerebral spinal fluid. Magnetic resonance angiography can be used to characterize vascular lesions within the orbit. New developments in magnetic field strength as well as the use of orbital surface coils achieve increasingly improved imaging resolution.

Tantisattamo E, Maggiore U and Piccoli GB (2022). "History of kidney transplantation: A journey of progression and evolution for success." Journal of Nephrology 35(7): 1783-1786.

[Full Text](#)

Department of Internal Medicine/Nephrology

Temmerman IM, **Mahmoud TH** and Veckeneer MAH (2022). "Autologous neurosensory retinal transplant to treat refractory serous retinal detachment secondary to optic disk coloboma." Retinal Cases and Brief Reports 16(5): 606-609.

[Full Text](#)

Department of Ophthalmology

Purpose: To describe a novel surgical technique to treat refractory serous retinal detachment in a patient with an optic disk coloboma. Methods: Case report. Results: A 32-year-old male patient with an optic disk coloboma in his right eye was referred for recurrent retinoschisis and serous macular detachment despite multiple vitrectomies. Previous surgical procedures included peeling of internal limiting membrane and juxtapapillary laser as well as different tamponade agents such as sulfur hexafluoride gas, standard silicone oil, and heavy silicone oil. Our first approach to close the cavity using autologous platelet concentrate and gas tamponade was also unsuccessful with early recurrence of the submacular fluid. In a second attempt, an autologous neurosensory retinal transplant was used to cover the optic disk cavity. At 17-month follow-up, the macula was still attached. As a postoperative complication, the patient developed high intraocular pressure, for which laser cycloablation eventually was necessary. Conclusion: Autologous neurosensory retinal transplant may be a reasonable treatment option for patients with recurrent optic disk cavity-associated maculopathy.

Tennant TC, Pandey S, Edhi AI and **Batke M** (2022). "Esophageal stricture caused by CMV in a non-HIV-infected renal transplant patient." *ACG Case Reports Journal* 9(8): e00836.

[Full Text](#)

Department of Internal Medicine/Gastroenterology

Esophageal stricture due to cytomegalovirus (CMV) infection is an uncommon pathology, with most reported cases occurring in patients infected with human immunodeficiency virus. We report a renal transplant patient who presented with progressive dysphagia and weight loss for 2 years. Endoscopic examination revealed a long esophageal stricture with a necrotic lesion but no typical CMV esophageal ulcers; immunostains were positive for CMV. Dysphagia resolved after treatment with ganciclovir and serial esophageal dilations. We are presenting the first case of esophageal stricture due to CMV esophagitis in a renal transplant patient without human immunodeficiency virus infection and are reviewing current literature.

Topf J, Wooldridge T, McCafferty K, Schömig M, Csiky B, Zwiech R, Wen W, Bhaduri S, Munera C, Lin R, Jebara A, Cirulli J and Menzaghi F (2022). "Efficacy of difelikefalin for the treatment of moderate to severe pruritus in hemodialysis patients: Pooled analysis of KALM-1 and KALM-2 phase 3 studies." *Kidney Medicine* 4(8): 100512.

[Full Text](#)

Department of Internal Medicine/Nephrology

Rationale & Objective: Chronic kidney disease–associated pruritus (CKD-aP) in patients treated by hemodialysis (HD) impairs quality of life (QoL). Difelikefalin, a selective κ -opioid receptor agonist, decreased the intensity of CKD-aP in patients undergoing HD. This pooled analysis evaluated difelikefalin's efficacy and the itch-related QoL overall and in subgroups defined by demographics or disease characteristics. **Study Design:** In KALM-1 and KALM-2, participants were randomized (1:1) to receive intravenous difelikefalin or placebo 3 times/wk for 12 weeks, followed by a 52-week open-label extension. **Setting & Participants:** Adults with moderate to severe CKD-aP treated by HD in North America, Europe, and the Asia-Pacific region. **Intervention:** Intravenous difelikefalin at 0.5 mcg/kg or placebo. **Outcomes:** Itch intensity (Worst Itching Intensity Numerical Rating Scale [WI-NRS]) and itch-related QoL (Skindex-10 and 5-D Itch questionnaires). **Results:** 851 participants were randomized (difelikefalin, n = 426; placebo, n = 425). This pooled analysis demonstrated early (week 1), sustained difelikefalin efficacy, with significantly greater achievement of ≥ 3 -point WI-NRS reduction with difelikefalin (51.1%) versus placebo (35.2%; $P < 0.001$). Achievement of a ≥ 4 -point WI-NRS reduction was significantly greater with difelikefalin (38.7%) versus placebo (23.4%; $P < 0.001$). Difelikefalin reduced itch intensity in subgroups based on age, sex, anti-itch medication use, the presence of specific medical conditions, and gabapentin or pregabalin use. More participants receiving difelikefalin versus placebo achieved clinically meaningful decreases of ≥ 15 points on the Skindex-10 scale (55.5% vs 40.5%, respectively; $P < 0.001$) and ≥ 5 points on the 5-D Itch scale (52.1% vs 42.3%, respectively; $P = 0.01$), with sustained 5-D Itch effects up to 64 weeks. **Limitations:** Subgroup samples were small. The WI-NRS, Skindex-10, and 5-D Itch are not used in routine clinical care of dialysis patients; therefore, findings may not reflect the real-world effectiveness of difelikefalin. **Conclusions:** Difelikefalin demonstrated rapid, sustained efficacy, with consistent results in diverse populations of patients treated by HD. **Funding:** Cara Therapeutics, Inc. **Trial Registration:** The KALM-1 trial is registered as NCT03422653 and the KALM-2 trial is registered as NCT03636269.

van den Hoogen IJ, Stuijzand WJ, Gianni U, van Rosendaal AR, Bax AM, Lu Y, Tantawy SW, Hollenberg EJ, Andreini D, Al-Mallah MH, Cademartiri F, **Chinnaiyan K**, Chow BJW, Conte E, Cury RC, Feuchtner G,

Goncalves PD, Hadamitzky M, Kim YJ, Leipsic J, Maffei E, Marques H, Plank F, Pontone G, Villines TC, Lee SE, Al'Aref SJ, Baskaran L, Danad I, Gransar H, Budoff MJ, Samady H, Virmani R, Berman DS, Chang HJ, Narula J, Min JK, Bax JJ, Lin FY, Shaw LJ and Investigators I (2022). "Early versus late acute coronary syndrome risk patterns of coronary atherosclerotic plaque." European Heart Journal-Cardiovascular Imaging 23(10): 1314-1323.

[Full Text](#)

Department of Internal Medicine/Cardiovascular Disease

Aims: The temporal instability of coronary atherosclerotic plaque preceding an incident acute coronary syndrome (ACS) is not well defined. We sought to examine differences in the volume and composition of coronary atherosclerosis between patients experiencing an early (≤ 90 days) versus late ACS (>90 days) after baseline coronary computed tomography angiography (CCTA). Methods and Results: From a multicenter study, we enrolled patients who underwent a clinically indicated baseline CCTA and experienced ACS during follow-up. Separate core laboratories performed blinded adjudication of ACS events and quantification of CCTA including compositional plaque volumes by Hounsfield units (HU): calcified plaque >350 HU, fibrous plaque 131-350 HU, fibrofatty plaque 31-130 HU and necrotic core <30 HU. In 234 patients (mean age 62 \pm 12 years, 36% women), early and late ACS occurred in 129 and 105 patients after a mean of 395 \pm 622 days, respectively. Patients with early ACS had a greater maximal diameter stenosis and maximal cross-sectional plaque burden as compared to patients with late ACS ($P < 0.05$). Larger total, fibrous, fibrofatty, and necrotic core volumes were observed in the early ACS group ($P < 0.05$). Findings for total, fibrous, fibrofatty, and necrotic core volumes were reproduced in an external validation cohort ($P < 0.05$). Conclusions: Volumetric differences in composition of coronary atherosclerosis exist between ACS patients according to their timing antecedent to the acute event. These data support that a large burden of non-calcified plaque on CCTA is strongly associated with near-term plaque instability and ACS risk.

Wuyckens S, Saint-Guillain M, Janssens G, Zhao LW, Li XQ, Ding XF, Sterpin E, Lee JA and Souris K (2022). "Treatment planning in arc proton therapy: Comparison of several optimization problem statements and their corresponding solvers." Computers in Biology and Medicine 148(105609).

[Full Text](#)

Department of Radiation Oncology

Arc proton therapy (ArcPT) is an emerging modality in cancer treatments. It delivers the proton beams following a sequence of irradiation angles while the gantry is continuously rotating around the patient. Compared to conventional proton treatments (intensity modulated proton therapy, IMPT), the number of beams is significantly increased bringing new degrees of freedom that leads to potentially better cancer care. However, the optimization of such treatment plans becomes more complex and several alternative statements of the problem can be considered and compared in order to solve the ArcPT problem. Three such problem statements, distinct in their mathematical formulation and properties, are investigated and applied to solving the ArcPT optimization problem. They make use of (i) fast iterative shrinkage-thresholding algorithm (FISTA), (ii) local search (LS) and (iii) mixed-integer programming (MIP). The treatment plans obtained with those methods are compared among them, but also with IMPT and an existing state-of-the-art method: Spot-Scanning Proton Arc (SPArc). MIP stands out at low scale problems both in terms of dose quality and time delivery efficiency. FISTA shows high dose quality but experiences difficulty to optimize the energy sequence while LS is mostly the antagonist. This detailed study describes independent approaches to solve the ArcPT problem and depending on the clinical case, one should be cautiously picked rather than the other. This paper gives the first formal definition of the problem at stake, as well as a first

reference benchmark. Finally, empirical conclusions are drawn, based on realistic assumptions.

Xiao AY, **Kanaan HD**, Lai Z, **Li W** and **Zhang PL** (2022). "Role of progenitor cell marker CD133 in supporting diagnosis of collapsing glomerulopathy." *International Urology and Nephrology* 54(8): 1957-1968.

[Full Text](#)

Department of Pathology

Zalikha AK, Abbas KAJ, Karabon P, **Hussein IH** and El-Othmani MM (2022). "The impact of month on joint arthroplasty in-hospital outcomes: The December effect." *Arthroplasty Today* 16: 101-106.

[Full Text](#)

Department of Foundational Medical Studies (OU)

Background: The purpose of this study was to assess the impact of month of the year on postsurgical outcomes after primary total hip arthroplasty (THA) and total knee arthroplasty (TKA) and to specifically analyze for a December effect. Material and Methods: The National Inpatient Sample was used to identify all patients older than 40 years undergoing primary TKA and THA between 2006 and 2015. Patients were stratified based on the month of the year of surgery. In-hospital complication, disposition, and economic outcomes were comparatively analyzed. Results: There were statistically significant differences in outcomes based on month of the year. When comparing December to the other months, both TKA and THA patients had significantly lower rates of any complication, postoperative anemia, and genitourinary complications, while there were significantly higher rates of home than rehab discharge and shorter average length of stay in December. THA patients additionally had significantly lower rates of cardiac and respiratory complications during December. Conclusion: Postoperative outcomes are significantly associated with the month in which arthroplasty is performed. This study provides evidence of a positive "December effect" of improved in-hospital complications and economic outcomes for surgeries performed in December. Future research should direct attention to the impact that social factors may have on outcomes after elective surgical procedures and how these factors may be translated to other months.

Zha L, Li JL, Krishnan SM, **Brennan MR**, Zhang YV, Povse P, Kerlin R, Shively K, Oleksik F, Williams J, Sykes E and **Sun Q** (2022). "New diagnostic cutoffs for adrenal insufficiency after cosyntropin stimulation using Abbott Architect cortisol immunoassay." *Endocrine Practice* 28(7): 684-689.

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OUWB Medical Student Author

Department of Pathology

Introduction: The accurate interpretation of the cosyntropin (adrenocorticotrophic hormone [ACTH]) stimulation test requires method- and assay-specific cutoffs of the level of cortisol. Compared with a historical cutoff (18 $\mu\text{g/dL}$) for polyclonal antibody-based immunoassays, lower thresholds were proposed for the Roche Elecsys II assay, which uses a monoclonal antibody. However, cutoffs for other commonly adopted, monoclonal antibody-based cortisol assays were not yet available. Here, we established the thresholds for the level of cortisol specific to the Abbott Architect immunoassay by comparing the measurements of the level of cortisol using 3 immunoassays. Methods: The ACTH stimulation test was performed in patients with suspected adrenal insufficiency (n 1/4 50). The serum cortisol level was measured using the Abbott Architect, Roche Elecsys II, and Siemens Centaur assays. The results of the Abbott assay were also compared with those of liquid chromatography -tandem mass spectrometry. The receiver operating characteristic analysis was performed to derive new diagnostic thresholds for

the Abbott assay using the polyclonal antibody-based Siemens assay as the reference method. Results: The concentrations of cortisol measured using the Abbott assay were similar to those measured using liquid chromatography-tandem mass spectrometry and the Roche Elecsys II assay but significantly lower than those measured using the Siemens assay. The optimized threshold for cortisol using the Abbott assay was 14.6 mu g/dL at 60 minutes after stimulation (sensitivity, 92%; specificity, 96%) and 13.2 mu g/dL at 30 minutes after stimulation (sensitivity, 100%; specificity, 89%). Conclusion: We recommend a threshold of 14.6 mu g/dL for the level of cortisol at 60 minutes after ACTH stimulation for the Abbott assay. In comparison with the historical threshold of 18 mu g/dL, the application of the new cutoff may significantly decrease false-positive results due to ACTH stimulation testing. The use of assay-specific cutoffs will be essential for reducing misclassification and overtreatment in patients with suspected adrenal insufficiency.

Zhang X, Seidelman J, Grewal D, **Mahmoud TH**, Mruthyunjaya P, Postel E, Chen X and Brodie F (2022). "Methicillin-resistant staphylococcus aureus endogenous endophthalmitis retinal detachment repairs." Ophthalmology Retina 6(8): 746-748.

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Department of Ophthalmology

Zhao LW, Liu G, **Li XQ** and **Ding XF** (2022). "An evolutionary optimization algorithm for proton arc therapy." Physics in Medicine and Biology 67(16): 16NT01.

[Full Text](#)

Department of Radiation Oncology

Objective: Proton arc plan normally contains thousands of spot numbers and hundreds of energy layers. A recent study reported that the beam delivery time (BDT) is proportional to the spot numbers. Thus, it is critical to find an optimal plan with a fast delivery speed while maintaining a good plan quality. Thus, we developed a novel evolutionary algorithm to directly search for the optimal spot sparsity solution to balance plan quality and BDT. Approach: The planning platform included a plan quality objective, a generator, and a selector. The generator is based on trust-region-reflective solver. A selector was designed to filter or add the spot according to the expected spot number, based on the user's input of BDT. The generator and selector are used alternatively to optimize a spot sparsity solution. Three clinical cases' CT and structure datasets, e.g. brain, lung, and liver cancer, were used for testing purposes. A series of user-defined BDTs from 15 to 250 s were used as direct inputs. The relationship between the plan's cost function value and BDT was evaluated in these three cases. Main Results: The evolutionary algorithm could optimize a proton arc plan based on clinical user input BDT directly. The plan quality remains optimal in the brain, lung, and liver cases until the BDT was shorter than 25 s, 50 s and 100 s, respectively. The plan quality degraded as the input delivery time became too short, indicating that the plan lacked enough spot or degree of freedom. Significance: This is the first proton arc planning framework to directly optimize plan quality with the BDT as an input for the new generation of proton therapy systems. This work paved the roadmap for implementing such new technology in a routine clinic and provided a planning platform to explore the trade-off between the BDT and plan quality.

Zillgitt AJ, **Haykal MA**, Chehab A and **Staudt MD** (2022). "Centromedian thalamic neuromodulation for the treatment of idiopathic generalized epilepsy." Frontiers in Human Neuroscience 16: 907716.

[Full Text](#)

Department of Neurology

Department of Neurosurgery

Idiopathic generalized epilepsy (IGE) is a common type of epilepsy and despite an increase in the number of available anti-seizure medications, approximately 20–30% of people with IGE continue to experience seizures despite adequate medication trials. Unlike focal epilepsy, resective surgery is not a viable treatment option for IGE; however, neuromodulation may be an effective surgical treatment for people with IGE. Thalamic stimulation through deep brain stimulation (DBS) and responsive neurostimulation (RNS) have been explored for the treatment of generalized and focal epilepsies. Although the data regarding DBS and RNS in IGE is limited to case reports and case series, the results of the published studies have been promising. The current manuscript will review the published literature of DBS and RNS within the centromedian nucleus of the thalamus for the treatment of IGE, as well as highlight an illustrative case.

Zureick AH, Grzywacz VP, **Almahariq MF**, Silverman BR, Vayntraub A, **Chen PY**, Gustafson GS, **Jawad MS** and **Dilworth JT** (2022). "Dose to the left anterior descending artery correlates with cardiac events after irradiation for breast cancer." International Journal of Radiation Oncology, Biology, Physics 114(1): 130-139.

[Full Text](#)

Department of Radiation Oncology

OUWB Medical Student Author

Purpose: Although global heart dose has been associated with late cardiac toxic effects in patients who received radiation therapy for breast cancer, data detailing the clinical significance of cardiac substructure dosimetry are limited. We investigated whether dose to the left anterior descending artery (LAD) correlates with adverse cardiac events. Methods and Materials: We identified 375 consecutively treated female patients from 2012 to 2018 who received left-sided breast or chest wall irradiation (with or without regional nodal irradiation). Medical records were queried to identify cardiac events after radiation therapy. Mean and maximum LAD and heart doses (LAD Dmean, LAD Dmax, heart Dmean, and heart Dmax) were calculated and converted to 2-Gy equivalent doses (EQD2). Univariate and multivariable Cox regression analyses were performed to determine association with cardiac toxic effects. Potential dose thresholds for each of the 4 dose parameters were identified by receiver operating characteristic (ROC) curve analysis, after which Kaplan-Meier analysis was performed to compare cardiac event-free survival based on these constraints. Results: Median follow-up time was 48 months. Thirty-six patients experienced a cardiac event, and 23 patients experienced a major cardiac event. On univariate and multivariable analyses, increased LAD Dmean, LAD Dmax, and heart Dmean were associated with increased risk of any cardiac event and a major cardiac event. ROC curve analysis identified a threshold LAD Dmean EQD2 of 2.8 Gy (area under the ROC curve, 0.69), above which the risk for any cardiac event was higher (P = .001). Similar results were seen when stratifying by LAD Dmax EQD2 of 6.7 Gy (P = .005) and heart Dmean EQD2 of 0.8 Gy (P = .01). Conclusions: Dose to the LAD correlated with adverse cardiac events in this cohort. Contouring and minimizing dose to the LAD should be considered for patients receiving radiation therapy for left-sided breast cancer.