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HENRY FORD HEALTH

Henry Ford Health Publication List – March 2022

This bibliography aims to recognize the scholarly activity and provide ease of access to journal articles, meeting abstracts, book chapters, books and other works published by Henry Ford Health personnel. Searches were conducted in PubMed, Embase, and Web of Science during the month, and then imported into EndNote for formatting. There are **119 unique citations** listed this month, with **13 articles** and **2 conference abstracts** on COVID-19.

Articles are listed first, followed by conference abstracts, books and book chapters, and a bibliography of publications on COVID-19. Because of various limitations, this does not represent an exhaustive list of all published works by Henry Ford Health authors.

Click the "Full Text" link to view the articles to which Sladen Library provides access. If the full-text of the article is not available, you may request it through ILLiad by clicking on "Request Article," or calling us at (313) 916-2550. If you would like to be added to the monthly email distribution list to automatically receive a PDF of this bibliography, or you have any questions or comments, please contact smoore31@hfhs.org. If your published work has been missed, please use this form to notify us for inclusion on next month's list. All articles and abstracts listed here are deposited into Scholarly Commons, the Henry Ford Health institutional repository.

Articles

Conference Abstracts

Articles

Administration

Stefanou A, **Gardner C**, and **Rubinfeld I**. A retrospective study of the effects of minimally invasive colorectal surgery on Patient Safety Indicators across a five-hospital system. *Surg Endosc* 2022; Epub ahead of print. PMID: 35237902. Full Text

BACKGROUND: The Agency for Healthcare Research and Quality uses Patient Safety Indicators (PSI) to gauge quality of care and patient safety in hospitals. PSI 90 is a weighted combination of several PSIs that primarily comprises perioperative events. This score can affect reimbursement through Medicare and hospital quality ratings. Minimally invasive surgery (MIS) has been shown to decrease adverse events and outcomes. We sought to evaluate individual PSI and PSI 90 outcomes of minimally invasive versus open colorectal surgeries using a large medical database from 5 hospitals. METHODS: A health system administrative database including all inpatients from 5 acute care hospitals was queried based on ICD 10 PC codes for colon and rectal surgery procedures performed between January 2, 2018 and December 31, 2019. Surgeries were labeled as MIS (laparoscopic) or open colorectal resection surgery. Patient demographics, health information, and case characteristics were analyzed with respect to surgical approach and PSI events. Statistical relationships between surgical approach and PSI were investigated using univariate methods and multivariate logarithmic regression analysis. PSIs of interest were PSI 8, PSI 9 PSI 11, PSI 12, and PSI 13. RESULTS: There were 1382 operations identified, with 861 (62%) being open and 521 (38%) being minimally invasive. Logistic modeling showed no significant difference between the 2 groups for PSI 3, 6, or 8 through 15. CONCLUSION: Understanding PSI 90 and its components is important to enhance perioperative patient care and optimize reimbursement rates. We showed that MIS, despite providing known clinical benefits, may not affect scores in the PSI 90. Surgical approach may have little effect on PSIs, and other patient and system components that are more important to these outcome measures should be pursued.

Allergy and Immunology

Cooper JJ, Atluri VL, Jain R, Pottinger PS, and **Coleman DT**. Safety of Cefazolin for Perioperative Prophylaxis in Patients with Penicillin Allergy Labels. *Ann Allergy Asthma Immunol* 2022; Epub ahead of print. PMID: 35342019. Full Text

Anesthesiology

Fayed M, **Nowak K**, **Angappan S**, **Patel N**, **Abdulkarim F**, **Penning DH**, and **Chhina AK**. Emergent Surgical Airway Skills: Time to Re-evaluate the Competencies. *Cureus* 2022; 14(3):e23260. PMID: 35342673. Full Text

Anesthesiology, Pain Management and Perioperative Medicine, Henry Ford Health System, Detroit, USA. Research, Henry Ford Health System, Detroit, USA.

Introduction One of the most challenging scenarios an anesthesia provider can face is treating a can't intubate can't ventilate (CICV) patient. The incidence of CICV is estimated to be around one in 10,000 cases. According to the American Society of Anesthesiology Closed Claims Study, adverse respiratory events are the most common type of injury, with difficult intubation and ventilation contributing to the majority of these cases. The objective of this non-interventional quality improvement project was to evaluate the prior training, exposure, and self-reported confidence in handling the CICV scenario among anesthesia providers at Henry Ford Hospital in Detroit, MI. Methods An online questionnaire was distributed via email to all residents, certified registered nurse anesthetists (CRNAs), and attending anesthesiologists in March 2021. The email contained a link to an online questionnaire via Microsoft Forms (Microsoft Corporation, Redmond, WA). Univariate group comparisons were carried out between the respondents' role (attending, CRNA, or resident), as well as between the number of years that the respondents were in practice (< 5 years, 5-10 years, > 10 years). Results Out of the total 170 anesthesia providers, 119 participated in the study where 54 (45%) were attendings, 44 (37%) were residents, and 21 (18%) were CRNAs. The majority (75%) did not know the surgical airway kit location, and 87% had not performed the surgical airway procedure before. The vast majority (96.7%) recommended simulation

training compared to online training or lecture series, and just over 50% recommended annual training frequency. When looking at the differences in responses based on years of experience as an anesthesia provider, the majority of those with > 10 years in practice knew how to perform the surgical airway technique while respondents with < 5 years did not know how to perform the technique, and 50% of those with five to 10 years experience knew how to perform the surgical airway procedure for a CICV scenario. Conclusion Although there were many significant differences observed between the various provider roles and years in practice, surprisingly, the responses revealed both a lack of experience and confidence in performing the surgical airway procedure in all provider roles. These findings highlight a need for better emergency airway teaching and training. These findings will be used to guide the design and implementation of improved surgical airway training for residents, CRNAs, and attending anesthesiologists with the goal of better preparedness for handling a CICV scenario.

Anesthesiology

Guerra-Londono CE, Tarazona CG, Sánchez-Monroy JA, Heppell O, Guerra-Londono JJ, and **Shah R**. The Role of Hyperthermia in the Treatment of Peritoneal Surface Malignancies. *Curr Oncol Rep* 2022; Epub ahead of print. PMID: 35325402. Full Text

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PURPOSE OF REVIEW: Hyperthermia is used to treat peritoneal surface malignancies (PSM), particularly during hyperthermic intraperitoneal chemotherapy (HIPEC). This manuscript provides a focused update of hyperthermia in the treatment of PSM. RECENT FINDINGS: The heterogeneous response to hyperthermia in PSM can be explained by tumor and treatment conditions. PSM tumors may resist hyperthermia via metabolic and immunologic adaptation. The thermodynamics of HIPEC are complex and require computational fluid dynamics (CFD). The clinical evidence supporting the benefit of hyperthermia is largely observational. Continued research will allow clinicians to characterize and predict the individual response of PSM to hyperthermia. The application of hyperthermia in current HIPEC protocols is mostly empirical. Thus, modeling heat transfer with CFD is a necessary task if we are to achieve consistent and reproducible hyperthermia. Although observational evidence suggests a survival benefit of hyperthermia, no clinical trial has tested the individual role of hyperthermia in PSM.

Behavioral Health Services/Psychiatry/Neuropsychology

Patel S, and **Sivananthan M**. Compulsivity in Intractable Idiopathic Generalized Epilepsy. *J Acad Consult Liaison Psychiatry* 2022; 63(2):180-181. PMID: 35241253. Request Article

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Cardiology/Cardiovascular Research

Chiang M, **Gonzalez PE**, **O'Neill BP**, **Lee J**, **Frisoli T**, **Wang DD**, **O'Neill WW**, and **Villablanca PA**. Left Atrial Venoarterial Extracorporeal Membrane Oxygenation for Acute Aortic Regurgitation and Cardiogenic Shock. *JACC Case Rep* 2022; 4(5):276-279. PMID: 35257102. Full Text

Center for Structural Heart Disease, Henry Ford Hospital, Detroit, Michigan, USA.

A 51-year-old man with past medical history of bioprosthetic aortic valve replacement presented in cardiogenic shock secondary to acute bioprosthesis degeneration with severe aortic regurgitation. Venoarterial extracorporeal membrane oxygenation is contraindicated in patients with severe AI. Use of left atrial venoarterial extracorporeal membrane oxygenation resulted in hemodynamic improvement,

allowing patient stabilization for emergency valve-in-valve transcatheter aortic valve replacement. (Level of Difficulty: Advanced.).

Cardiology/Cardiovascular Research
Cowger JA, and Cogswell R. Myocardial Recovery or Urgent Transplant: Mutually Exclusive Goals Under the Current UNOS Allocation System. *J Am Coll Cardiol* 2022; 79(9):914-916. PMID: 35241225. Full Text

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Cardiology/Cardiovascular Research
Diaczok B, Nair G, **Lin CH**, Paxton JH, Abbas A, **Barkley G**, **O'Neil B**, **O'Neil W**, Patel K, Sims M, **Poisson L**, and Sule AA. Evolution of prescribing practices and outcomes in the COVID-19 pandemic in metropolitan areas. *Infez Med* 2022; 30(1):86-95. PMID: 35350268. Full Text

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INTRODUCTION: We wanted to characterize the evolution of the COVID-19 pandemic in a typical metropolitan area. METHODS: Data were extracted from the Detroit COVID-19 Consortium database for hospitalized COVID-19 patients treated in Southeast Michigan over the 12-month period from March 2020 to February 2021. Demographic and outcomes data were compared to CDC data. RESULTS: A total of 4,775 patients were enrolled during the study period. We divided the pandemic into three phases: Phase-1 (Spring Surge); Phase-2 (Summer Lull); and Phase-3 (Fall Spike). Changes in hydroxychloroquine, remdesivir, corticosteroid, antibiotic and anticoagulant use closely followed publication of landmark studies. Mortality in critically-ill patients decreased significantly from Phase-1 to Phase-3 (60.3% vs. 47.9%, Chisq p=0.0110). Monthly mortality of all hospitalized patients ranged between 14.8% - 21.5% during Phase-1 and 9.7 to 13.4% during Phase 3 (NS). DISCUSSION: The COVID-19 pandemic presented in three unique phases in Southeast Michigan. Medical systems rapidly modified treatment plans, often preceding CDC and NIH recommendations. Despite improved treatment regimens, intubation rates and mortality for hospitalized patients remained elevated. CONCLUSION: Preventive measures aimed at reducing hospitalizations for COVID-19 should be emphasized.

Cardiology/Cardiovascular Research
Généreux P, Kirtane AJ, Kandzari DE, Armstrong EJ, Krucoff MW, Redfors B, Ben-Yehuda O, Lerew DR, Ali ZA, Maehara A, **O'Neill WW**, and Stone GW. Randomized Evaluation of Vessel Preparation With Orbital Atherectomy Prior to Drug-Eluting Stent Implantation in Severely Calcified Coronary Artery Lesions: Design and Rationale of the ECLIPSE Trial. *Am Heart J* 2022; Epub ahead of print. PMID: 35288105. Full Text

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Division of Cardiology, NewYork-Presbyterian Hospital/Columbia University Irving Medical Center, New York, NY; Clinical Trials Center, Cardiovascular Research Foundation, New York, NY; Department of Cardiology, Sahlgrenska University Hospital, Gothenburg, Sweden.
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Clinical Trials Center, Cardiovascular Research Foundation, New York, NY; The Zena and Michael A. Wiener Cardiovascular Institute, Icahn School of Medicine at Mount Sinai, New York, NY.

BACKGROUND: Severe coronary artery calcification has been associated with stent underexpansion, procedural complications, and increased rates of early and late adverse clinical events in patients undergoing percutaneous coronary intervention (PCI). To date, no lesion preparation strategy has been shown to definitively improve outcomes of PCI for calcified coronary artery lesions. STUDY DESIGN AND OBJECTIVES: ECLIPSE (NCT03108456) is a prospective, randomized, multicenter trial designed to evaluate two different vessel preparation strategies in severely calcified coronary artery lesions. The routine use of the Diamondback 360® Coronary Orbital Atherectomy System (OAS) is compared with conventional balloon angioplasty prior to drug-eluting stent implantation. The trial aims to enroll approximately 2000 subjects with a primary clinical endpoint of target vessel failure, defined as the composite of cardiac death, target vessel-related myocardial infarction, or ischemia-driven target vessel revascularization assessed at 1 year. The co-primary endpoint is the acute post-procedural in-stent minimal cross-sectional area as assessed by optical coherence tomography in a 500-subject cohort. Enrollment is anticipated to complete in 2022 with total clinical follow-up planned for 2 years. CONCLUSIONS: ECLIPSE is a large-scale, prospective randomized trial powered to demonstrate whether a vessel preparation strategy of routine OAS is superior to conventional balloon angioplasty prior to implantation of drug-eluting stents in severely calcified coronary artery lesions.

Cardiology/Cardiovascular Research
Kodali S, Hahn RT, George I, Davidson CJ, Narang A, Zahr F, Chadderdon S, Smith R, Grayburn PA, **O'Neill WW**, **Wang DD**, Herrmann H, Silvestry F, Elmariah S, Inglessis I, Passeri J, Lim DS, Salerno M, Makar M, Mack MJ, Leon MB, and Makkar R. Transfemoral Tricuspid Valve Replacement in Patients With Tricuspid Regurgitation: TRISCEND Study 30-Day Results. *JACC Cardiovasc Interv* 2022; 15(5):471-480. PMID: 35272771. Full Text

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Oregon Health and Science University, Portland, Oregon, USA.
Baylor Scott and White The Heart Hospital Plano, Plano, Texas, USA.
Henry Ford Hospital, Detroit, Michigan, USA.
Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania, USA.
Massachusetts General Hospital, Boston, Massachusetts, USA.
University of Virginia, Charlottesville, VA, USA.
Cedars-Sinai Medical Center, Los Angeles, California, USA.

OBJECTIVES: The TRISCEND study (Edwards EVOQUE Tricuspid Valve Replacement: Investigation of Safety and Clinical Efficacy after Replacement of Tricuspid Valve with Transcatheter Device) is evaluating the safety and performance of transfemoral transcatheter tricuspid valve replacement in patients with

clinically significant tricuspid regurgitation (TR) and elevated surgical risk. BACKGROUND: Transcatheter valve replacement could lead to a paradigm shift in treating TR and improving patient quality of life. METHODS: In the prospective, single-arm, multicenter TRISCEND study, patients with symptomatic moderate or greater TR, despite medical therapy, underwent percutaneous transcatheter tricuspid valve replacement with the EVOQUE system. A composite rate of major adverse events, echocardiographic parameters, and clinical, functional, and quality-of-life measures were assessed at 30 days. RESULTS: Fifty-six patients (mean age of 79.3 years, 76.8% female, 91.1% TR severe or greater, 91.1% atrial fibrillation, and 87.5% New York Heart Association functional class III or IV) were treated. At 30 days, TR was reduced to mild or less in 98%. The composite major adverse events rate was 26.8% at 30 days caused by 1 cardiovascular death in a patient with a failed procedure, 2 reinterventions after device embolization, 1 major access site or vascular complication, and 15 severe bleeds, of which none were life-threatening or fatal. No myocardial infarction, stroke, renal failure, major cardiac structural complications, or device-related pulmonary embolism were observed. New York Heart Association significantly improved to functional class I or II (78.8%; $P < 0.001$), 6-minute walk distance improved 49.8 m ($P < 0.001$), and Kansas City Cardiomyopathy Questionnaire score improved 19 points ($P < 0.001$). CONCLUSIONS: Early experience with the transfemoral EVOQUE system in patients with clinically significant TR demonstrated technical feasibility, acceptable safety, TR reduction, and symptomatic improvement at 30 days. The TRISCEND II randomized trial (NCT04482062) is underway.

Cardiology/Cardiovascular Research

Lemor A, **Dabbagh MF**, Cohen D, **Villablanca P**, Tehrani B, **Alaswad K**, **Alqarqaz M**, Lasorda D, Kaki A, Genereux P, **O'Neill W**, and **Basir MB**. Rates and impact of vascular complications in mechanical circulatory support. *Catheter Cardiovasc Interv* 2022; Epub ahead of print. PMID: 35266287. Full Text

Division of Cardiovascular Medicine, Henry Ford Hospital, Detroit, Michigan, USA.
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Gagnon Cardiovascular Institute, Morristown Medical Center, Morristown, New Jersey, USA.

BACKGROUND: Mechanical circulatory support (MCS) devices are increasingly used for hemodynamic support in cardiogenic shock or high-risk percutaneous coronary interventions. Vascular complications remain a major source of morbidity and mortality despite technological advances with percutaneous techniques. Little is known about the rates and predictors of vascular complications with large-bore access MCS in the contemporary era. METHODS: The study cohort was derived from National Inpatient Sample using data from 2015 to 2019 for cardiac hospitalizations with the use of: intra-aortic balloon pump (IABP) Impella, and/or extracorporeal membrane oxygenation (ECMO). The rates of vascular complications and in-hospital outcomes were analyzed using multivariable logistic regression. RESULTS: Of 221,700 hospitalizations with MCS use, the majority had only IABP (68%). The rates of vascular complications were greatest with ECMO (15.8%) when compared with IABP (3.0%) and Impella (5.6%). Among patients with vascular complications, in-hospital mortality was higher with ECMO (56.3%) when compared with IABP (26.2%) and Impella (33.8%). Peripheral arterial disease (PAD) was the strongest predictor of vascular complications, with 10 times higher odds when present (adjusted odds ratio [aOR] 10.96, $p < 0.001$). In risk-adjusted models, when compared with IABP, the use of Impella (aOR: 1.73, $p < 0.001$), ECMO (aOR: 5.35, $p < 0.001$), or a combination of MCS devices (aOR: 3.47, $p < 0.001$) was associated with higher odds of vascular complications. CONCLUSIONS: In contemporary practice, the use of MCS is associated with significant vascular complications and in-hospital mortality. Predictors of vascular complications include larger arteriotomy size, female gender, and peripheral arterial disease. Vascular access management remains essential to prevent major complications.

Cardiology/Cardiovascular Research

Megaly M, Morcos R, Kucharik M, Tawadros M, **Basir MB**, Pershad A, Maini B, Khalili H, **Alaswad K**, and Brilakis ES. Complications and Failure Modes of Polymer-Jacketed Guidewires; Insights From the MAUDE Database. *Cardiovasc Revasc Med* 2022; 36:132-135. PMID: 33958304. Full Text

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BACKGROUND: The modes of failure of coronary polymer-jacketed guidewires have received limited study. METHODS: We queried the Manufacturer and User Facility Device Experience (MAUDE) database between January 2011 and December 2020 for reports on coronary polymer-jacketed guidewires and retrieved 254 reports. RESULTS: The most common failure mode was failure of the guidewire to cross (36.2%), followed by guidewire fracture (35%), peeling of the polymer jacket (13.8%), failure to retrieve the guidewire (13.8%), and guidewire unraveling (4.7%). Guidewire fracture was more common with soft (37.3%) compared with stiff (23.8%) guidewires. Failure of retrieval was only reported with soft guidewires (9%). Coronary perforation and dissection occurred in 19.7% and 7.9% of the reports, with more reports with stiff as compared with soft guidewires (45.2% vs. 14.6% for perforation and 21.4% vs. 5.3% for dissection). CONCLUSIONS: The most common failure modes of polymer-jacketed guidewires during percutaneous coronary intervention are failure to cross the lesion, guidewire fracture, and peeling of the polymer jacket. Coronary perforations were more common with stiff whereas wire fracture was more common with soft polymer-jacketed guidewires.

Cardiology/Cardiovascular Research

Nikolakopoulos I, Vemmou E, Karacsonyi J, **Alaswad K**, Karmpaliotis D, Rafeh NA, Schimmel D, Benzuly K, Flaherty JD, Poomipanit P, ElGuindy AM, Nicholas Burke M, and Brilakis ES. Percutaneous Coronary Intervention of Chronic Total Occlusions Involving a Bifurcation: Insights from the PROGRESS-CTO Registry. *Hellenic J Cardiol* 2022; Epub ahead of print. PMID: 35247542. Full Text

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Minneapolis Heart Institute Foundation and Minneapolis Heart Institute, Abbott Northwestern Hospital, Minneapolis, MN. Electronic address: esbrilakis@gmail.com.

BACKGROUND: The impact of bifurcations at the proximal or distal cap on the outcomes of chronic total occlusion (CTO) percutaneous coronary intervention (PCI) has received limited study. METHODS: We analyzed the clinical, angiographic, and procedural data of 4,584 cases performed in patients between 2012-2020 in a global CTO PCI registry. We compared 4 groups according to bifurcation location "proximal cap", "distal cap", "proximal and distal cap", and "no bifurcation". RESULTS: The CTO involved a bifurcation in 67% cases, as follows: proximal cap (n=1451, 33%), distal cap (n=622, 14%), or both caps (n=954, 21%). "Proximal and distal cap" cases had higher J-CTO compared with "proximal cap", "distal cap" and "no bifurcation" cases, (2.9 ± 1.1 vs 2.5 ± 1.1 vs 2.4 ± 1.2 vs 2 ± 1.2, P<0.0001), and they were also associated with lower technical success rate (79% vs 85% vs 85% vs 90%, p<0.0001), higher pericardiocentesis rate (1% vs 1% vs 0.2% vs 0.3%, P=0.02) and higher emergency coronary artery bypass surgery rate (0.3 % vs 0% vs 0% vs 0%, P=0.01). CONCLUSION: More than two thirds of CTO PCIs involve a bifurcation, which is associated with lower technical success and higher risk for complications.

Cardiology/Cardiovascular Research

Nona P, and **Russell C**. Cardio-Rheumatology: Prevention of Cardiovascular Disease in Inflammatory Disorders. *Med Clin North Am* 2022; 106(2):349-363. PMID: 35227435. Full Text

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Inflammation plays a well-established role in the development and progression of atherosclerosis. Individuals exposed to chronic inflammation are at an increased risk of developing cardiovascular disease, including coronary artery disease and heart failure, independent of associated traditional risk factors. Traditional risk assessment tools and calculators underestimate the true cardiac risk in this population. In addition to this, there is a lack of awareness on the association between inflammation and cardiovascular disease. These factors lead to undertreatment in terms of preventive cardiac care in patients with chronic inflammatory disease.

Cardiology/Cardiovascular Research

O'Connor RA, **Patel V**, Lang V, and Brima W. Systemic Inflammatory Response Syndrome from Nitrofurantoin: A Case Report. *Am J Case Rep* 2022; 23:e935113. PMID: 35292615. Full Text

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Department of Cardiology, Henry Ford Hospital, Detroit, MI, USA.

BACKGROUND Nitrofurantoin is an antibiotic that is commonly used and preferred to treat lower urinary tract infections due to its relatively safe adverse effects profile. However, with the increased emphasis on antibiotic stewardship, it is important to recognize the rare, yet serious adverse effects profile of this medication. One of the rare adverse reactions is the development of systemic inflammatory response syndrome from nitrofurantoin. CASE REPORT We present a case of a 66-year-old woman who developed a classic systemic inflammatory response syndrome, including leukocytosis and fevers, after 2 repeated exposures to nitrofurantoin after a urological procedure. The patient had an initial infectious workup which was negative. A suspected adverse reaction to nitrofurantoin was suspected and the patient was found to have complete resolution of symptoms with discontinuation of the drug and with supportive treatment. CONCLUSIONS This case demonstrates that although nitrofurantoin is known to be relatively well tolerated, clinicians should still be aware of the adverse reactions, including a potential systemic inflammatory response, from nitrofurantoin use. This information should be used to educate patients going forward on potential adverse effects to be aware of.

Cardiology/Cardiovascular Research

Salerno CT, Hayward C, Hall S, Goldstein D, Saeed D, Schmitto J, Kaczorowski D, Molina E, Zimpfer D, Tsui S, Soltesz E, Pham DT, Mokadam NA, Kilic A, Davis E, Feller E, Lorts A, Silvestry S, Slaughter MS, Potapov E, Atluri P, **Cowger J**, and Pagani FD. HVAD to HeartMate 3 left ventricular assist device exchange: Best practices recommendations. *Eur J Cardiothorac Surg* 2022; Epub ahead of print. PMID: 35325091. Full Text

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Department of Cardiac Surgery, Medical University Vienna, Vienna, Austria.
Department of Cardiothoracic Surgery, Royal Papworth Hospital, Cambridge, United Kingdom.
Department of Cardiothoracic Surgery, Cleveland Clinical Hospital, Cleveland, OH.

Division of Cardiac Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL.
Division of Cardiac Surgery, The Ohio State University Wexner Medical Center, Columbus, OH.
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Division of Cardiothoracic Surgery, University of Utah, Salt Lake City, UT.
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Department of Thoracic and Cardiovascular Surgery, German Heart Centre, Berlin, Germany.
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The HeartWare HVAD System (Medtronic) is a durable implantable left ventricular assist device that has been implanted in approximately 20,000 patients worldwide for bridge to transplant and destination therapy indications. In December 2020, Medtronic issued an Urgent Medical Device Communication informing clinicians of a critical device malfunction in which the HVAD may experience a delay or failure to restart after elective or accidental discontinuation of pump operation. Moreover, evolving retrospective comparative effectiveness studies of patients supported with the HVAD demonstrated a significantly higher risk of stroke and all-cause mortality when compared with a newer generation of a commercially available durable left ventricular assist device. Considering the totality of this new information on HVAD performance and the availability of an alternate commercially available device, Medtronic halted the sale and distribution of the HVAD System in June 2021. The decision to remove the HVAD from commercial distribution now requires the use of the HeartMate 3 left ventricular assist system (Abbott, Inc) if a patient previously implanted with an HVAD requires a pump exchange. The goal of this document is to review important differences in the design of the HVAD and HeartMate 3 that are relevant to the medical management of patients supported with these devices, and to assess the technical aspects of an HVAD-to-HeartMate 3 exchange. This document provides the best available evidence that supports best practices. (J Thorac Cardiovasc Surg 2022;-:1-8).

Cardiology/Cardiovascular Research

Simsek B, Kostantinis S, Karacsonyi J, **Basir MB**, **Megaly M**, Masoumi A, Jaffer FA, Gorgulu S, Brilakis ES, and **Alaswad K**. Temporal Trends in Retrograde Crossing of Epicardial Collaterals in Chronic Total Occlusion Percutaneous Coronary Intervention. *J Invasive Cardiol* 2022; Epub ahead of print. PMID: 35302949. Full Text

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BACKGROUND: The use of retrograde crossings in chronic total occlusion (CTO) percutaneous coronary intervention (PCI) provides higher technical success rates in CTO-PCI. However, the use of epicardial collaterals carries a higher complication risk. METHODS AND RESULTS: In this study, we aimed to investigate the temporal trends in retrograde crossing of epicardial collaterals, introduction of new guidewires, in-hospital major adverse cardiovascular events (MACE), and technical success rates in a large, multinational registry. We demonstrate that technical success rates increased substantially from about 5%-10% to 76% in the past decade without a concomitant increase in MACE rate (~3% to 4%), likely associated with increased operator experience and introduction of new guidewires. In addition, we show that while high-volume centers have higher technical success, they also have higher perforation rates.

Cardiology/Cardiovascular Research

Varshney AS, DeFilippis EM, **Cowger JA**, Netuka I, Pinney SP, and Givertz MM. Trends and Outcomes of Left Ventricular Assist Device Therapy: JACC Focus Seminar. *J Am Coll Cardiol* 2022; 79(11):1092-1107. PMID: 35300822. Full Text

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As the prevalence of advanced heart failure continues to rise, treatment strategies for select patients include heart transplantation or durable left ventricular assist device (LVAD) support, both of which improve quality of life and extend survival. Recently, the HeartMate 3 has been incorporated into clinical practice, the United Network for Organ Sharing donor heart allocation system was revised, and the management of LVAD-related complications has evolved. Contemporary LVAD recipients have greater preoperative illness severity, but survival is higher and adverse event rates are lower compared with prior eras. This is driven by advances in device design, patient selection, surgical techniques, and long-term management. However, bleeding, infection, neurologic events, and right ventricular failure continue to limit broader implementation of LVAD support. Ongoing efforts to optimize management of patients implanted with current devices and parallel development of next-generation devices are likely to further improve outcomes for patients with advanced heart failure.

Cardiology/Cardiovascular Research

Weber MP, Stulak J, Maltais S, Pagani FD, **Cowger J**, and Tchantchaleishvili V. Quality of Life Metrics in LVAD Patients after Hemocompatibility-Related Adverse Events. *Artif Organs* 2022; Epub ahead of print. PMID: 35315092. Full Text

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BACKGROUND: Hemocompatibility-related adverse events (HRAE) negatively influence survival. However, no study has examined the impact of these events on health-related quality of life (HRQOL) and functional outcomes following continuous flow left ventricular assist device implantation (CF-LVAD). We assessed the impact of HRAE events on HRQOL and hypothesized that HRAE's adversely impact HRQOL and functional outcomes. METHODS: INTERMACS database identified patients undergoing primary CF-LVAD implantation from 2008 to 2017. HRAEs included stroke, non-surgical bleeding, hemolysis, and pump thrombosis and were identified as defined in the literature. HRAEs were further stratified as Tier 1-2 and disabling stroke events. Time-series analysis was executed for HRAE patients with values pre-HRAE, post-HRAE, and closest to 12 month follow up. Local polynomial regression curves modeling individual patients were superimposed into "spaghetti" plots. RESULTS: All HRQOL and functional metrics improved in patients over time, despite HRAE complication. However, these patient metrics were significantly reduced compared to the non-HRAE cohort (Table 2). Advanced data visualization techniques noted decline after experiencing an HRAE with a subsequent recovery to baseline levels or higher (Figure1-4). 6MWT was noted to be most affected in the post-HRAE period but recovered similar to other metrics (Table 3). CONCLUSIONS: The burden of HRAE following CF-LVAD implantation did not negatively impact quality of life. However, 6-minute walk test did not increase in the post-HRAE period in all HRAE patients. Improvement of heart failure symptoms after CF-LVAD coupled with optimal management following HRAE act to preserve enhanced quality of life.

Cardiology/Cardiovascular Research

Williams MR, Jilaihawi H, Makkar R, **O'Neill WW**, Guyton R, Malaisrie SC, Brown DL, Blanke P, Leipsic JA, Pibarot P, Hahn RT, Leon MB, Cohen DJ, Bax JJ, Kodali SK, Mack MJ, Lu M, and Webb JG. The

PARTNER 3 Bicuspid Registry for Transcatheter Aortic Valve Replacement in Low-Surgical-Risk Patients. *JACC Cardiovasc Interv* 2022; 15(5):523-532. PMID: 35272777. Full Text

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OBJECTIVES: The study compared 1-year outcomes between transcatheter aortic valve replacement (TAVR) patients with bicuspid aortic valve (BAV) morphology and clinically similar patients having tricuspid aortic valve (TAV) morphology. BACKGROUND: There are limited prospective data on TAVR using the SAPIEN 3 device in low-surgical-risk patients with severe, symptomatic aortic stenosis and bicuspid anatomy. METHODS: Low-risk, severe aortic stenosis patients with BAV were candidates for the PARTNER 3 (Placement of Aortic Transcatheter Valves 3) (P3) bicuspid registry or the P3 bicuspid continued access protocol. Patients treated in these registries were pooled and propensity score matched to TAV patients from the P3 randomized TAVR trial. Outcomes were compared between groups. The primary endpoint was the 1-year composite rate of death, stroke, and cardiovascular rehospitalization. RESULTS: Of 320 total submitted BAV patients, 169 (53%) were treated, and most were Sievers type 1. The remaining 151 patients were excluded caused by anatomic or clinical criteria. Propensity score matching with the P3 TAVR cohort (496 patients) yielded 148 pairs. There were no differences in baseline clinical characteristics; however, BAV patients had larger annuli and they experienced longer procedure duration. There was no difference in the primary endpoint between BAV and TAV (10.9% vs 10.2%; P = 0.80) or in the rates of the individual components (death: 0.7% vs 1.4%; P = 0.58; stroke: 2.1% vs 2.0%; P = 0.99; cardiovascular rehospitalization: 9.6% vs 9.5%; P = 0.96). CONCLUSIONS: Among highly select bicuspid aortic stenosis low-surgical-risk patients without extensive raphe or subannular calcification, TAVR with the SAPIEN 3 valve demonstrated similar outcomes to a matched cohort of patients with tricuspid aortic stenosis.

Cardiology/Cardiovascular Research

Ya'Qoub L, **Alqarqaz M**, Mahadevan VS, Saad M, and Elgendy IY. Impact of COVID-19 on Management Strategies for Coronary and Structural Heart Disease Interventions. *Curr Cardiol Rep* 2022;1-9; Epub ahead of print. PMID: 35347567. Full Text

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PURPOSE OF REVIEW: The COVID-19 pandemic has created unprecedented challenges globally, with significant strain on the healthcare system in the United States and worldwide. In this article, we review the impact of COVID-19 on percutaneous coronary interventions and structural heart disease practices,

as well as the impact of the pandemic on related clinical research and trials. We also discuss the consensus recommendations from the scientific societies and suggest potential solutions and strategies to overcome some of these challenges. FINDINGS: With the limited resources and significant burden on the healthcare system during the pandemic, changes have evolved in practice to provide care to the highest risk patients while minimizing unnecessary exposure during elective surgical or transcatheter procedures. The COVID-19 crisis has significantly impacted the management of patients with acute coronary syndromes, chronic coronary syndromes, and structural heart disease.

Center for Health Policy and Health Services Research
Rossom RC, Penfold RB, Owen-Smith AA, Simon GE, and **Ahmedani BK**. Suicide Deaths Before and During the Coronavirus Disease 2019 Pandemic: An Interrupted Time-series Study. *Med Care* 2022; Epub ahead of print. PMID: 35230276. Full Text

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INTRODUCTION: With stressors that are often associated with suicide increasing during the coronavirus disease 2019 (COVID-19) pandemic, there has been concern that suicide mortality rates may also be increasing. Our objective was to determine whether suicide mortality rates increased during the COVID-19 pandemic. METHODS: We conducted an interrupted time-series study using data from January 2019 through December 2020 from 2 large integrated health care systems. The population at risk included all patients or individuals enrolled in a health plan at HealthPartners in Minnesota or Henry Ford Health System in Michigan. The primary outcome was change in suicide mortality rates, expressed as annualized crude rates of suicide death per 100,000 people in 10 months following the start of the pandemic in March 2020 compared with the 14 months prior. RESULTS: There were 6,434,675 people at risk in the sample, with 55% women and a diverse sample across ages, race/ethnicity, and insurance type. From January 2019 through February 2020, there was a slow increase in the suicide mortality rate, with rates then decreasing by 0.45 per 100,000 people per month from March 2020 through December 2020 (SE=0.19, P=0.03). CONCLUSIONS: Overall suicide mortality rates did not increase with the pandemic, and in fact slightly declined from March to December 2020. Our findings should be confirmed across other settings and, when available, using final adjudicated state mortality data.

Dermatology
Boothby-Shoemaker W, **Kwa M**, **Kohen L**, **Shaw B**, and **Friedman BJ**. A Rare Case of Primary Cutaneous Signet-Ring Cell Melanoma With Discrepant Findings on Gene Expression Profiling and Chromosomal Microarray Analysis. *Am J Dermatopathol* 2022; Epub ahead of print. PMID: 35316818. Full Text

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Melanoma with signet ring cell features is an exceptionally rare variant of primary cutaneous and metastatic melanoma. The molecular mechanisms underlying this unusual cytologic phenotype in malignant melanocytes are largely unknown. In this report, we aim to add to the literature by describing the histomorphological, immunophenotypic, gene expression, and cytogenetic findings in 1 recently encountered case.

Dermatology
Enescu CD, **Artz C**, and **Axelson A**. Severe cutaneous drug toxicity following enfortumab vedotin treatment for metastatic urothelial carcinoma. *JAAD Case Rep* 2022; 21:140-143. PMID: 35242967. Full Text

Department of Dermatology, Wayne State University School of Medicine, Detroit, Michigan.
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Dermatology
Kim KM, and **Lim HW**. The uses of tranexamic acid in dermatology: a review. *Int J Dermatol* 2022; Epub ahead of print. PMID: 35323992. Full Text

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Tranexamic acid is a plasmin inhibitor that is used off-label for the treatment of melasma. The use of tranexamic acid has expanded in the field of dermatology based on its anti-inflammatory and anti-melanin-producing properties, which include the treatment of rosacea, urticaria, and post-inflammatory hyperpigmentation. Tranexamic acid may have more uses in dermatology that require future studies. It should be used with caution during the COVID-19 pandemic given its procoagulant nature.

Dermatology
Maghfour J, Gill F, Olson J, Guido N, Echuri H, and Murina A. Association of airborne toxins with geographic clustering of cutaneous T-cell lymphoma in Louisiana. *J Am Acad Dermatol* 2022; Epub ahead of print. PMID: 35271939. Full Text

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Dermatology
Maghfour J, Olayinka J, **Hamzavi IH**, and **Mohammad TF**. A Focused Review on the Pathophysiology of Post inflammatory Hyperpigmentation. *Pigment Cell Melanoma Res* 2022; Epub ahead of print. PMID: 35306737. Full Text

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Post-inflammatory hyperpigmentation (PIH) is one of the most common disorders of acquired hyperpigmentation. It often develops following cutaneous inflammation and is triggered by various stimuli, from inflammatory and autoimmune conditions to iatrogenic causes and mechanical injuries. While it is well established that an increase in melanin production and distribution within the epidermis and dermis is a hallmark feature of this condition, the exact mechanisms underlying PIH are not completely understood. This article aims to review the current evidence on the pathophysiology of PIH as the cellular and molecular mechanism of PIH represents a promising avenue for the development of novel, targeted therapies.

Dermatology
Rehman R, Ahmed L, and **Kohen L**. YouTube as a source of dermatology residency information. *Int J Dermatol* 2022; Epub ahead of print. PMID: 35246852. Full Text

Oakland University William Beaumont School of Medicine, Rochester, MI, USA.
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Department of Dermatology, Henry Ford Health System, Detroit, MI, USA.

Dermatology
Rehman R, Azam M, Rehman S, **Arora H**, and **Kohen L**. Gender and ethnic representation of incoming Mohs micrographic surgery fellows in the United States: A look into fellowship diversity. *JAAD Int* 2022; 6:11-12. PMID: 34849491. Full Text

Oakland University William Beaumont School of Medicine, Rochester, Michigan.
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Dermatology
Rehman R, Mateen M, Tripathi R, Fahs F, and **Mohammad TF**. Teledermatology etiquette and the hijab: recommendations for culturally sensitive care. *Int J Dermatol* 2022; Epub ahead of print. PMID: 35333377. Full Text

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Dermatology
Rehman R, Shareef S, **Mohammad TF**, Potts G, and Fahs F. Applying to Dermatology Residency without a Home Program: Advice to Medical Students in the COVID-19 Pandemic and Beyond. *Clin Dermatol* 2022; Epub ahead of print. PMID: 35248689. Full Text

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Dermatology
Simpson EL, Papp KA, Blauvelt A, Chu CY, Hong HC, Katoh N, Calimlim BM, Thyssen JP, Chiou AS, Bissonnette R, **Stein Gold LF**, Wegzyn C, Hu X, Liu M, Liu J, Tenorio AR, Chu AD, and Guttman-Yassky E. Efficacy and Safety of Upadacitinib in Patients With Moderate to Severe Atopic Dermatitis: Analysis of Follow-up Data From the Measure Up 1 and Measure Up 2 Randomized Clinical Trials. *JAMA Dermatol* 2022; Epub ahead of print. PMID: 35262646. Full Text

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IMPORTANCE: Primary results from the Measure Up 1 and Measure Up 2 studies demonstrated upadacitinib efficacy and safety through 16 weeks in patients with atopic dermatitis. Longer-term outcomes remain unknown. OBJECTIVE: To evaluate long-term (52 weeks) efficacy and safety of

upadacitinib treatment in patients with atopic dermatitis. DESIGN, SETTING, AND PARTICIPANTS: Measure Up 1 and Measure Up 2 are ongoing double-blind, placebo-controlled, replicate phase 3 randomized clinical trials that include adults and adolescents with moderate to severe atopic dermatitis at 151 and 154 centers, respectively. Cutoffs for this analysis were December 21, 2020 (Measure Up 1), and January 15, 2021 (Measure Up 2). INTERVENTIONS: Patients were randomized 1:1:1 to receive once-daily oral upadacitinib 15 mg, 30 mg, or placebo. At week 16, patients randomized at baseline to receive upadacitinib 15 mg (273 and 260 patients in Measure Up 1 and Measure Up 2, respectively) and 30 mg (270 and 268 patients) continued assigned treatment; placebo-treated patients were rerandomized 1:1 to receive upadacitinib 15 mg (121 and 120 patients in Measure Up 1 and Measure Up 2, respectively) or 30 mg (123 and 121 patients) in a double-blinded manner. MAIN OUTCOMES AND MEASURES: Safety and efficacy, including 75% improvement in the Eczema Area and Severity Index and Validated Investigator Global Assessment for Atopic Dermatitis score of clear (0) or almost clear (1) with 2 or greater grades of improvement, were assessed. RESULTS: Measure Up 1 and Measure Up 2 included a total of 1609 patients (mean [SD] age, 33.8 [15.6] years; 727 women [45.2%]; 882 men [54.8%]). Efficacy at week 16 was maintained through week 52. At week 52, 75% improvement in the Eczema Area and Severity Index was achieved by 82.0% (95% CI, 77.0%-86.9%) and 79.1% (95% CI, 73.9%-84.4%) of patients continuing the 15-mg dose and 84.9% (95% CI, 80.3%-89.5%) and 84.3% (95% CI, 79.6%-89.0%) of patients continuing the 30-mg dose (for Measure Up 1 and Measure Up 2, respectively); Validated Investigator Global Assessment for Atopic Dermatitis score of clear (0) or almost clear (1) with 2 or greater grades of improvement was achieved by 59.2% (95% CI, 52.9%-65.5%) and 52.6% (95% CI, 46.2%-59.1%) and 62.5% (95% CI, 56.3%-68.7%) and 65.1% (95% CI, 58.9%-71.2%) of patients in the Measure Up 1 and Measure Up 2 studies, respectively. Treatment discontinuation due to adverse events was low overall but was slightly higher for the upadacitinib 30-mg dose. Both upadacitinib doses were well tolerated with no new safety signals. CONCLUSIONS AND RELEVANCE: In this analysis of follow-up data from 2 randomized clinical trials, longer-term treatment of adolescents and adults with moderate to severe atopic dermatitis with upadacitinib demonstrated a favorable benefit-risk profile, with sustained efficacy responses through 52 weeks. TRIAL REGISTRATION: ClinicalTrials.gov Identifiers: NCT03569293 (Measure Up 1) and NCT03607422 (Measure Up 2).

Dermatology

Sivesind TE, **Maghfour J**, Rietcheck H, Kamel K, Malik AS, and Dellavalle RP. Cannabinoids for the Treatment of Dermatologic Conditions. *JID Innov* 2022; 2(2):100095. PMID: 35199092. Full Text

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In recent years, cannabinoid (CB) products have gained popularity among the public. The anti-inflammatory properties of CBs have piqued the interest of researchers and clinicians because they represent promising avenues for the treatment of autoimmune and inflammatory skin disorders that may be refractory to conventional therapy. The objective of this study was to review the existing literature regarding CBs for dermatologic conditions. A primary literature search was conducted in October 2020, using the PubMed and Embase databases, for all articles published from 1965 to October 2020. Review articles, studies using animal models, and nondermatologic and pharmacologic studies were excluded. From 248 nonduplicated studies, 26 articles were included. There were 13 articles on systemic CBs and 14 reports on topical CBs. Selective CB receptor type 2 agonists were found to be effective in treating diffuse cutaneous systemic sclerosis and dermatomyositis. Dronabinol showed efficacy for trichotillomania. Sublingual cannabidiol and Δ-9-tetrahydrocannabinol were successful in treating the pain associated with epidermolysis bullosa. Available evidence suggests that CBs may be effective for the treatment of various inflammatory skin disorders. Although promising, additional research is necessary to evaluate efficacy and to determine dosing, safety, and long-term treatment guidelines.

Dermatology

Yin L, Klein EJ, Svigos K, **Novice T**, Gutierrez D, Oratz R, Lacouture ME, **Powers M**, Senna M, Shapiro J, and Lo Sicco K. Dermatologist Awareness of Scalp Cooling for Chemotherapy-induced Alopecia. *J Am Acad Dermatol* 2022; Epub ahead of print. PMID: 35278488. Full Text

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Diagnostic Radiology

Memon AB, **Al-Hader R**, **Sherburn F**, and **Corrigan J**. Clinical and radiographic course of a patient with late-onset, rapidly progressive, MRI-negative myelitis after COVID-19 illness. *Clin Neurol Neurosurg* 2022; 214:107152. PMID: 35131662. Full Text

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Diagnostic Radiology

Parikh AK, and **Leschied JR**. Microaggressions in our daily workplace encounters: a barrier to achieving diversity and inclusion. *Pediatr Radiol* 2022; Epub ahead of print. PMID: 35229186. Full Text

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Originally coined in 1970 by Dr. Chester Pierce, the term "microaggression" encompasses any subtle insult or informal degradation of a member of any socially marginalized group. While incidents of blatant racism and sexism might be deterred by zero-tolerance policies in the workforce, microaggressions still plague our daily interactions with colleagues and patients alike. In this paper we define and categorize microaggressions using real-world examples, describe their repercussions and provide ways to appropriately respond to microaggressions on a personal and institutional level.

Diagnostic Radiology

Webb AR, Bodendorfer BM, **Laucis NC**, Wang DX, Dean DM, Rabe JL, **Soliman SB**, **Klochko CL**, Argintar EH, Lutton DM, and Wiesel BB. Significant variability exists in preoperative planning software measures of glenoid morphology for shoulder arthroplasty. *Semin Arthroplasty* 2022; 32(1):82-92. PMID: Not assigned. Full Text

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Background & Hypothesis: We sought to assess the reliability of 4 different shoulder arthroplasty 3-dimensional preoperative planning programs. Comparison was also made to manual measurements conducted by 2 fellowship-trained musculoskeletal radiologists. We hypothesized that there would be

significant variation in measurements of glenoid anatomy affected by glenoid deformity. Methods: A retrospective review of computed tomography (CT) scans of patients undergoing shoulder arthroplasty was undertaken. A total of 76 computed tomographies were analyzed for glenoid version and inclination by 4 templating software systems (VIP, Blueprint, TrueSight, ExactechGPS). Inter-rater reliability was assessed via intra-class correlation coefficient (ICC). For those shoulders with glenohumeral arthritis (58/76), ICC was also calculated when sub-grouping by modified Walch classification. Lin's concordance correlation coefficient was calculated for each system with 2 musculoskeletal-trained radiologists' measurements. Results: Measurements of glenoid version and inclination differed between at least 2 programs by 5º-10º in 75% and 92% of glenoids respectively, and by >10º in 18% and 45% respectively. ICC was excellent for version but only moderate for inclination. ICC was highest among Walch A glenoids for both version (near excellent) and inclination (good), and lowest among Walch D for version (near poor) and Walch B for inclination (moderate). When measuring version, VIP had the highest concordance with manual measurement; Blueprint had the lowest. For inclination Blueprint had the highest concordance; ExactechGPS had the lowest. Discussion & Conclusion: Despite overall high reliability for measures of glenoid version between 4 frequently utilized shoulder arthroplasty templating softwares, this reliability is significantly affected by glenoid deformity. The programs were overall less reliable when measuring inclination, and a similar trend of decreasing reliability with increasing glenoid deformity emerged that was not statistically significant. Concordance with manual measurement is also variable. Further research is needed to understand how this variability should be accounted for during shoulder arthroplasty preoperative planning. Level of Evidence: Level III; Retrospective Comparative Study

Emergency Medicine

Jayaprakash N, **Pflaum-Carlson J**, **Gardner-Gray J**, **Hurst G**, **Kinni H**, **Tang A**, **Coba V**, and **Rivers EP**. Accelerated Critical Therapy Now in the Emergency Department Using an Early Intervention Team: The Impact of Early Critical Care Consultation for ICU Boarders. *Crit Care Explor* 2022; 4(3):e0660. PMID: 35317241. Full Text

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Evaluate the impact of an emergency department (ED)-based critical care consultation service, hypothesizing early consultation results in shorter hospital length of stay (LOS). DESIGN: Retrospective observational study from February 2018 to 2020. SETTING: An urban academic quaternary referral center. PATIENTS: Adult patients greater than or equal to 18 years admitted to the ICU from the ED. Exclusion criteria included age less than 18 years, do not resuscitate/do not intubate documented prior to arrival, advanced directives outlining limitations of care, and inability to calculate baseline modified Sequential Organ Failure Assessment (mSOFA) score. INTERVENTIONS: ED-based critical care consultation by an early intervention team (EIT) initiated by the primary emergency medicine physician compared with usual practice. MEASUREMENTS: The primary outcome was hospital LOS, and secondary outcomes were hospital mortality, ICU LOS, ventilator-free days, and change in the mSOFA. MAIN RESULTS: A total 1,764 patients met inclusion criteria, of which 492 (27.9%) were evaluated by EIT. Final analysis, excluding those without baseline mSOFA score, limited to 1,699 patients, 476 in EIT consultation group, and 1,223 in usual care group. Baseline mSOFA scores (±sd) were higher in the EIT consultation group at 3.6 (±2.4) versus 2.6 (±2.0) in the usual care group. After propensity score matching, there was no difference in the primary outcome: EIT consultation group had a median (interquartile range [IQR]) LOS of 7.0 days (4.0-13.0 d) compared with the usual care group median (IQR) LOS of 7.0 days (4.0-13.0 d), $p = 0.64$. The median (IQR) boarding time was twice as long subjects in the EIT consultation group at 8.0 (5.0-15.0) compared with 4.0 (3.0-7.0) usual care, $p < 0.001$. CONCLUSIONS: An ED-based critical care consultation model did not impact hospital LOS. This model was used in the ED and the EIT cared for critically ill patients with higher severity of illness and longer ED boarding times.

Emergency Medicine

Puskarich MA, Ingraham NE, Merck LH, Driver BE, Wacker DA, Black LP, Jones AE, Fletcher CV, South AM, Murray TA, **Lewandowski C**, Farhat J, Benoit JL, Biros MH, Cherabuddi K, Chipman JG, Schacker TW, Guirgis FW, Voelker HT, Koopmeiners JS, and Tignanelli CJ. Efficacy of Losartan in Hospitalized Patients With COVID-19-Induced Lung Injury: A Randomized Clinical Trial. *JAMA Netw Open* 2022; 5(3):e222735. PMID: 35294537. Full Text

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IMPORTANCE: SARS-CoV-2 viral entry may disrupt angiotensin II (AII) homeostasis, contributing to COVID-19 induced lung injury. AII type 1 receptor blockade mitigates lung injury in preclinical models, although data in humans with COVID-19 remain mixed. OBJECTIVE: To test the efficacy of losartan to reduce lung injury in hospitalized patients with COVID-19. DESIGN, SETTING, AND PARTICIPANTS: This blinded, placebo-controlled randomized clinical trial was conducted in 13 hospitals in the United States from April 2020 to February 2021. Hospitalized patients with COVID-19 and a respiratory sequential organ failure assessment score of at least 1 and not already using a renin-angiotensin-aldosterone system (RAAS) inhibitor were eligible for participation. Data were analyzed from April 19 to August 24, 2021. INTERVENTIONS: Losartan 50 mg orally twice daily vs equivalent placebo for 10 days or until hospital discharge. MAIN OUTCOMES AND MEASURES: The primary outcome was the imputed arterial partial pressure of oxygen to fraction of inspired oxygen (Pao2:Fio2) ratio at 7 days. Secondary outcomes included ordinal COVID-19 severity; days without supplemental o2, ventilation, or vasopressors; and mortality. Losartan pharmacokinetics and RAAS components (AII, angiotensin-[1-7] and angiotensin-converting enzymes 1 and 2)] were measured in a subgroup of participants. RESULTS: A total of 205 participants (mean [SD] age, 55.2 [15.7] years; 123 [60.0%] men) were randomized, with 101 participants assigned to losartan and 104 participants assigned to placebo. Compared with placebo, losartan did not significantly affect Pao2:Fio2 ratio at 7 days (difference, -24.8 [95%, -55.6 to 6.1]; P = .12). Compared with placebo, losartan did not improve any secondary clinical outcomes and led to fewer vasopressor-free days than placebo (median [IQR], 9.4 [9.1-9.8] vasopressor-free days vs 8.7 [8.2-9.3] vasopressor-free days). CONCLUSIONS AND RELEVANCE: This randomized clinical trial found that initiation of orally administered losartan to hospitalized patients with COVID-19 and acute lung injury did not improve Pao2:Fio2 ratio at 7 days. These data may have implications for ongoing clinical trials. TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT04312009.

Emergency Medicine

Shievitz M. Male with urinary urgency, frequency, and dysuria. *J Am Coll Emerg Physicians Open* 2022; 3(2):e12696. PMID: 35316969. Full Text

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Emergency Medicine
Shires DA, Kcomt L, Kattari L, **Liroff M**, and **Lee RC**. Emergency Clinicians' Comfort Levels in Caring for Transgender Patients. *Transgender Health* 2022;8; Epub ahead of print. PMID: Not assigned. Request Article

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Objective: Transgender individuals report negative experiences in emergency department settings, but little is known about emergency clinicians' barriers to treating transgender patients. The purpose of this study was to explore emergency clinicians' experiences with transgender patients to better understand their comfort with caring for this population.Methods: We conducted a cross-sectional survey of emergency clinicians in an integrated health system in the Midwest. To assess the relationship between each independent variable and the outcome variables (i.e., comfort level generally and comfort level asking transgender patients about their body parts specifically), Mann-Whitney U test or Kruskal-Wallis analysis of variance was conducted for categorical independent variables and Pearson correlations were conducted for continuous independent variables.Results: Most participants (90.1%) were comfortable caring for transgender patients, whereas two-thirds (67.9%) were comfortable asking transgender patients about body parts. Although none of the independent variables was associated with increased clinician comfort level caring for transgender patients in general, White clinicians and those who were unsure how to ask patients about their gender identity or transgender-specific care they had received were less comfortable asking about body parts.Conclusion: Having skills to communicate with transgender patients was associated with emergency clinicians' comfort levels. In addition to offering traditional classroom-based didactics about transgender health care, providing opportunities for clinical rotations that allow clinicians-in-training to treat, and perhaps more importantly, learn from transgender patients will likely be higher yield in bolstering clinician confidence in serving this patient population.

Endocrinology and Metabolism
Haider SA, **Levy S**, **Rock JP**, and **Craig JR**. Prolactinoma: Medical and Surgical Considerations. *Otolaryngol Clin North Am* 2022; Epub ahead of print. PMID: 35256169. Full Text

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Prolactinomas are the most common secretory tumor of the pituitary gland. Clinical symptoms may be due to prolactin oversecretion, localized mass effect, or a combination of both. Although the mainstay of prolactinoma management is medical therapy with dopamine agonists, endoscopic endonasal or transcranial surgery, radiation therapy, or a combination of these is an important treatment option in select cases. This article discusses prolactinoma phenotypes, clinical presentations, and clinically pertinent medical and surgical considerations when managing these tumors.

Endocrinology and Metabolism
Miller KM, Kanapka LG, Rickels M, Ahmann A, Aleppo G, Ang LP, Bhargava A, Bode BW, Carlson AL, Chaytor N, Gannon G, Goland R, Hirsh I, Kiblinger L, **Kruger D**, Kudva YC, Levy C, McGill J, O'Malley G, Peters A, Philipson L, Philis-Tsimikas A, Pop-Busui R, Salam M, Shah VN, Thompson MJ, Vendrame F, Verdejo A, Weinstock RS, Young L, and Pratley R. Benefit of Continuous Glucose Monitoring (CGM) in

Reducing Hypoglycemia is Sustained Through 12 Months of Use Among Older Adults with Type 1 Diabetes. *Diabetes Technol Ther* 2022; Epub ahead of print. PMID: 35294272. Request Article

OBJECTIVE: To evaluate glycemic outcomes in the Wireless Innovation for Seniors with Diabetes Mellitus (WISDM) randomized clinical trial (RCT) participants during an observational extension phase. RESEARCH DESIGN AND METHODS: WISDM RCT was a 26-week RCT comparing continuous glucose monitoring (CGM) with blood glucose monitoring (BGM) in 203 adults age ≥60 years with type 1 diabetes. Following the RCT, 100 (98%) CGM group participants continued CGM (CGM-CGM cohort) and 94 (98%) BGM group participants initiated CGM (BGM-CGM cohort) for an additional 26 weeks. RESULTS: CGM was used a median of >90% of the time at 52 weeks in both cohorts. In the CGM-CGM cohort, median time <70 mg/dL decreased from 5.0% at baseline to 2.6% at 26 weeks and remained stable with a median of 2.8% at 52 weeks (p<0.001 baseline to 52 weeks). Participants spent more time in range 70-180 mg/dL (TIR) (mean 56% versus 64%; p<0.001) and had lower HbA1c (mean 7.6% [59mmol/mol] versus 7.4% [57mmol/mol]; p=0.01) from baseline to 52 weeks. In BGM-CGM, from 26 to 52 weeks median time <70 mg/dL decreased from 3.9% to 1.9% (p<0.001), TIR increased from 56% to 60% (p=0.006) and HbA1c decreased from 7.5%[58mmol/mol] to 7.3%[57mmol/mol] (p=0.025). In BGM-CGM, a severe hypoglycemic event was reported for 9 participants while using BGM during the RCT and for 2 participants during the extension phase with CGM (p=0.02). CONCLUSIONS: CGM use reduced hypoglycemia without increasing hyperglycemia in older adults with type 1 diabetes. These data provide further evidence for fully integrating CGM into clinical practice. .

Family Medicine

Shires DA, Kcomt L, Kattari L, **Liroff M**, and **Lee RC**. Emergency Clinicians' Comfort Levels in Caring for Transgender Patients. *Transgender Health* 2022;8; Epub ahead of print. PMID: Not assigned. Request Article

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Objective: Transgender individuals report negative experiences in emergency department settings, but little is known about emergency clinicians' barriers to treating transgender patients. The purpose of this study was to explore emergency clinicians' experiences with transgender patients to better understand their comfort with caring for this population.Methods: We conducted a cross-sectional survey of emergency clinicians in an integrated health system in the Midwest. To assess the relationship between each independent variable and the outcome variables (i.e., comfort level generally and comfort level asking transgender patients about their body parts specifically), Mann-Whitney U test or Kruskal-Wallis analysis of variance was conducted for categorical independent variables and Pearson correlations were conducted for continuous independent variables.Results: Most participants (90.1%) were comfortable caring for transgender patients, whereas two-thirds (67.9%) were comfortable asking transgender patients about body parts. Although none of the independent variables was associated with increased clinician comfort level caring for transgender patients in general, White clinicians and those who were unsure how to ask patients about their gender identity or transgender-specific care they had received were less comfortable asking about body parts.Conclusion: Having skills to communicate with transgender patients was associated with emergency clinicians' comfort levels. In addition to offering traditional classroom-based didactics about transgender health care, providing opportunities for clinical rotations that allow clinicians-in-training to treat, and perhaps more importantly, learn from transgender patients will likely be higher yield in bolstering clinician confidence in serving this patient population.

Hematology-Oncology

Abu Rous F, **Gutta R**, **Li P**, Halmos B, and **Gadgeel S**. Pembrolizumab in Combination with Chemotherapy in Patients with ERBB2-Mutated Non-Small Cell Lung Cancer. *Target Oncol* 2022; Epub ahead of print. PMID: 35312940. Full Text

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BACKGROUND: Human epidermal growth factor receptor 2 (ERBB2) mutation is a known oncogenic driver mutation in a small proportion of non-small cell lung cancers (NSCLCs). Many targeted therapies are being developed and investigated for the treatment of ERBB2-mutated NSCLC, however none of these agents have yet been approved as a front-line treatment. Thus, platinum-based chemotherapy with or without immunotherapy remains the preferred first-line therapy for ERBB2-mutated NSCLC. OBJECTIVE: We aimed to study the activity of chemotherapy in combination with pembrolizumab as first-line treatment in patients with stage IV ERBB2-mutated NSCLC. PATIENTS AND METHODS: We retrospectively identified five patients with ERBB2-mutated NSCLC treated with carboplatin, pemetrexed and pembrolizumab as first-line therapy between 2018 and 2020. Overall survival (OS), progression-free survival (PFS), and time to next therapy (TTNT) were summarized by Kaplan-Meier methodology using R 4.0.5 with median time to event. Response rates defined by partial response (PR) or PR + stable disease (SD) and 95% Clopper-Pearson confidence interval (CI) were calculated. RESULTS: The median age of these five patients was 60 years and all five patients' tumors had ERBB2 mutations-4 had exon 20 mutation and 1 had exon 23 mutation. With a median follow-up of 32 months, the median OS was 24 months, the median PFS was 9 months, and the median TTNT was 9 months. The response rate was 0.6 for PR (Clopper-Pearson exact 95% CI 0.147-0.947) and 0.8 for PR and SD (Clopper-Pearson exact 95% CI 0.284-0.995). No unexpected toxicities were observed. CONCLUSION: In a small number of patients, chemotherapy and pembrolizumab as first-line therapy in ERBB2-mutated NSCLC patients demonstrated activity similar to previous reports with this regimen. Future clinical trials are needed to determine the role of chemotherapy and immunotherapy for this patient population in the context of emerging targeted agents.

Hematology-Oncology

Berntorp E, LeBeau P, Ragni MV, Borhany M, Abajas YL, Tarantino MD, Holstein K, Croteau SE, Liesner R, Tarango C, Carvalho M, McGuinn C, Funding E, Kempton CL, Bidlingmaier C, Cohen A, Oldenburg J, Kearney S, Knoll C, **Kuriakose P**, Acharya S, Reiss UM, Kulkarni R, Witkop M, Lethagen S, Krouse R, Shapiro AD, and Astermark J. Quality of life in a large multinational haemophilia B cohort (The B-Natural study) - Unmet needs remain. *Haemophilia* 2022; Epub ahead of print. PMID: 35263495. Full Text

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INTRODUCTION: The B-Natural study is a multicentre, multinational, observational study of haemophilia B (HB) designed to increase understanding of clinical manifestations, treatment and quality of life (QoL). AIM: To characterise and compare QoL in HB across disease severity groups and individuals with inhibitors to identify gaps in treatment. METHODS: A total of 224 individuals from 107 families were enrolled from a total of 24 centres in North America (n = 16), Europe (n = 7) and Asia (n = 1). Of these, 68 (30.4%) subjects had severe (<1 IU/dL), median age 15.6 years, 114 (50.9%) moderate (1-5 IU/dL), age 13.3 years, and 42 (18.8%) mild (>5-< 40 IU/dL), age 12.1 years, disease. Twenty-nine participants had inhibitors or a history of inhibitors. Three versions of the EQ-5D instrument were used as a measure of QoL: proxy (ages 4-7), youth (ages 8-15) and self (age 16+). Each instrument included a visual analogue scale ranging from 100 (best health) to 0 (worst health) to assess current day's health (EQ VAS). Range-of-motion (ROM) for elbows, knees and ankles was assessed using a four-point scale, from which a composite score was calculated. RESULTS: In all severity groups, a proportion of subjects showed less than optimal QoL. The majority of the mild and moderate severe participants reported a normal EQ-5D health profile (79% and 72%, respectively), whereas about half (47%) of the severe participants and only 13% of the inhibitor participants reported this profile. CONCLUSION: The B-Natural study reveals impacted QoL in all disease severities of HB including those with inhibitors. Unmet needs remain and include nonsevere HB.

Hematology-Oncology

Dziadziuszko R, Peters S, Mok T, Camidge DR, **Gadgeel SM**, Ou SI, Konopa K, Noé J, Nowicka M, Bordogna W, Morcos PN, Smoljanovic V, and Shaw AT. Circulating Cell-free DNA as a Prognostic Biomarker in Patients with Advanced ALK+ Non-small Cell Lung Cancer in the Global Phase III ALEX Trial. *Clin Cancer Res* 2022; Epub ahead of print. PMID: 35275991. Full Text

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INTRODUCTION: We retrospectively assessed prognostic value of circulating cell-free DNA (cfDNA) using data from the phase III ALEX study in treatment-naïve, advanced ALK+ NSCLC. METHODS: Patients were randomized to receive twice-daily alectinib 600 mg (n = 152) or crizotinib 250 mg (n = 151). cfDNA was quantified from baseline plasma samples, with patients stratified into {less than or equal to}median and >median cfDNA biomarker-evaluable populations (BEP). Effect of cfDNA concentration on outcomes was analyzed using a Cox regression model with treatment group as covariate, and in multivariate analyses. RESULTS: Median cfDNA concentration in the BEP was 11.53 ng/mL (n = 276). A positive correlation was found between cfDNA concentration and number of lesions, organ lesion sites, and tumor size (sum of longest diameter; all p<0.0001). In both treatment arms, patients in the >median BEP were more likely to experience disease progression than the {less than or equal to}median BEP (alectinib adjusted hazard ratio [HR] 2.04 [95% confidence interval (CI): 1.07-3.89], p=0.0305; crizotinib adjusted HR 1.83 [95% CI: 1.11-3.00], p=0.0169). Median progression-free survival was longer with alectinib than crizotinib in both {less than or equal to}median and >median BEPs (p<0.0001). Overall survival data remain immature; survival probability was lower in the >median versus {less than or equal to}median BEP in both treatment arms (alectinib HR 2.52 [95% CI: 1.08-5.88], p=0.0333; crizotinib HR 2.63 [95% CI: 1.27-5.47], p=0.0096). CONCLUSION: These data suggest that plasma cfDNA concentration may have prognostic value in advanced ALK+ NSCLC. Prospectively designed studies are warranted to investigate this finding.

Hematology-Oncology

Fu J, Reid SA, French B, Hennessy C, **Hwang C**, Gatson NT, Duma N, Mishra S, Nguyen R, Hawley JE, **Singh SRK**, Chism DD, Venepalli NK, Warner JL, Choueiri TK, Schmidt AL, Fecher LA, Girard JE, Bilen MA, Ravindranathan D, Goyal S, Wise-Draper TM, Park C, Painter CA, McGlown SM, de Lima Lopes G, Jr., Serrano OK, and Shah DP. Racial Disparities in COVID-19 Outcomes Among Black and White Patients With Cancer. *JAMA Netw Open* 2022; 5(3):e224304. PMID: 35344045. Full Text

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IMPORTANCE: Non-Hispanic Black individuals experience a higher burden of COVID-19 than the general population; hence, there is an urgent need to characterize the unique clinical course and outcomes of COVID-19 in Black patients with cancer. OBJECTIVE: To investigate racial disparities in severity of COVID-19 presentation, clinical complications, and outcomes between Black patients and non-Hispanic White patients with cancer and COVID-19. DESIGN, SETTING, AND PARTICIPANTS: This retrospective cohort study used data from the COVID-19 and Cancer Consortium registry from March 17, 2020, to November 18, 2020, to examine the clinical characteristics and outcomes of COVID-19 in Black patients with cancer. Data analysis was performed from December 2020 to February 2021. EXPOSURES: Black and White race recorded in patient's electronic health record. MAIN OUTCOMES AND MEASURES: An a priori 5-level ordinal scale including hospitalization intensive care unit admission, mechanical ventilation, and all-cause death. RESULTS: Among 3506 included patients (1768 women [50%]; median [IQR] age, 67 [58-77] years), 1068 (30%) were Black and 2438 (70%) were White. Black patients had higher rates of preexisting comorbidities compared with White patients, including obesity (480 Black patients [45%] vs 925 White patients [38%]), diabetes (411 Black patients [38%] vs 574 White patients [24%]), and kidney disease (248 Black patients [23%] vs 392 White patients [16%]). Despite the similar distribution of cancer type, cancer status, and anticancer therapy at the time of COVID-19 diagnosis, Black patients presented with worse illness and had significantly worse COVID-19 severity (unweighted odds ratio, 1.34 [95% CI, 1.15-1.58]; weighted odds ratio, 1.21 [95% CI, 1.11-1.33]). CONCLUSIONS AND RELEVANCE: These findings suggest that Black patients with cancer experience worse COVID-19 outcomes compared with White patients. Understanding and addressing racial inequities within the causal framework of structural racism is essential to reduce the disproportionate burden of diseases, such as COVID-19 and cancer, in Black patients.

Hematology-Oncology

Patnaik A, **Gadgeel S**, Papadopoulos KP, Rasco DW, Haas NB, Der-Torossian H, Faltaos D, Potvin D, Tassell V, Tawashi M, Chao R, and O'Dwyer PJ. Phase I Study of Glesatinib (MGCD256) in Combination with Erlotinib or Docetaxel in Patients with Advanced Solid Tumors. *Target Oncol* 2022; Epub ahead of print. PMID: 35347559. Full Text

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BACKGROUND: Oncogenic drivers in solid tumors include aberrant activation of mesenchymal epithelial transition factor (MET) and AXL. OBJECTIVE: This study investigated the safety and antitumor activity of glesatinib, a multitargeted receptor tyrosine kinase inhibitor that inhibits MET and AXL at clinically relevant doses, in combination with erlotinib or docetaxel. PATIENTS AND METHODS: The phase I portion of this open-label, multicenter study included two parallel arms in which ascending doses of oral glesatinib (starting dose 96 mg/m(2)) were administered with erlotinib or docetaxel (starting doses 100 mg once daily and 50 mg/m(2), respectively) using a modified 3 + 3 design. Maximum tolerated dose (MTD) was based on dose-limiting toxicities (DLTs) during the first 21-day treatment cycle. Enrollment focused on patients with solid tumor types typically associated with MET aberration and/or AXL overexpression. The primary objective was to determine the safety profile of the treatment combinations. Antitumor activity and pharmacokinetics (PK) were also assessed. RESULTS: Ten dose levels of glesatinib across three glycolate formulations (unmicronized, micronized, or micronized version 2 [V2] tablets) available during the course of the study were investigated in 14 dose-escalation cohorts (n = 126). MTDs of unmicronized glesatinib plus erlotinib or docetaxel, and micronized glesatinib plus erlotinib were not reached.

Micronized glesatinib 96 mg/m(2) plus docetaxel exceeded the MTD. Further dosing focused on glesatinib micronized V2: maximum administered dose (MAD) was 700 mg twice daily with erlotinib 150 mg once daily or docetaxel 75 mg/m(2) every 3 weeks. DLTs, acceptable at lower glesatinib (micronized V2) dose levels, occurred in two of five and two of six patients at the MADs of glesatinib + erlotinib and glesatinib + docetaxel, respectively. Across all cohorts, the most frequent treatment-related adverse events were diarrhea (glesatinib + erlotinib: 84.1%; glesatinib + docetaxel: 45.6%), fatigue (46.4%, 70.4%), and nausea (30.4%, 35.1%). The objective response rate was 1.8% and 12.0% in all glesatinib + erlotinib and glesatinib + docetaxel cohorts, respectively. CONCLUSIONS: The safety profile of glesatinib plus erlotinib or docetaxel was acceptable and there were no PK interactions. MADs of glesatinib 700 mg twice daily (micronized V2) with erlotinib 150 mg once daily or docetaxel 75 mg/m(2) every 3 weeks exceeded the MTD by a small margin. Modest signals of efficacy were observed with these treatment combinations in non-genetically selected patients with advanced solid tumors. CLINICAL TRIALS REGISTRATION: ClinicalTrials.gov NCT00975767; 11 September 2009.

Hematology-Oncology

Rubinstein SM, Bhutani D, Lynch RC, Hsu CY, Shyr Y, Advani S, Mesa RA, Mishra S, Mundt DP, Shah DP, Sica RA, Stockerl-Goldstein KE, Stratton C, Weiss M, Beeghly-Fadiel A, Accordino M, Assouline SE, Awosika J, Bakouny Z, Bashir B, Berg S, Bilen MA, Castellano CA, Cogan JC, Kc D, Friese CR, Gupta S, Hausrath D, **Hwang C**, Johnson NA, Joshi M, Kasi A, Klein EJ, Koshkin VS, Kuderer NM, Kwon DH, Labaki C, Latif T, Lau E, Li X, Lyman GH, McKay RR, Nagaraj G, Nizam A, Nonato TK, Olszewski AJ, Polimera HV, Portuguese AJ, Puc MM, Razavi P, Rosovski R, Schmidt A, Shah SA, Shastri A, Su C, Torka P, Wise-Draper TM, Zubiri L, Warner JL, and Thompson MA. Patients recently treated for B-lymphoid malignancies show increased risk of severe COVID-19: a CCC19 registry analysis. *Blood Cancer Discov* 2022; Epub ahead of print. PMID: 35262738. Full Text

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Patients with B-lymphoid malignancies have been consistently identified as a population at high risk of severe COVID-19. Whether this is exclusively due to cancer-related deficits in humoral and cellular immunity, or whether risk of severe COVID-19 is increased by anti-cancer therapy, is uncertain. Using data derived from the COVID-19 and Cancer Consortium (CCC19), we show that patients treated for B-lymphoid malignancies have an increased risk of severe COVID-19 compared to control populations of patients with non-B-lymphoid hematologic malignancies. Among patients with B-lymphoid malignancies, those who received anti-cancer therapy within 12 months of COVID-19 diagnosis experienced increased COVID-19 severity compared to patients with B-lymphoid malignancies off therapy, after adjustment for cancer status and several other prognostic factors. Our findings suggest that patients recently treated for a B-lymphoid malignancy are at uniquely high risk for severe COVID-19.

Hospital Medicine

Hommel EL, Nagaraja D, **Chakfeh E**, and Heymann JC. An Elusive Case of Cerebral Amyloid Angiopathy: Diagnostic and Treatment Considerations. *Prim Care Companion CNS Disord* 2022; 24(2). PMID: 35334162. Full Text

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Hospital Medicine

Swaminathan L, **Kaatz S**, Chubb H, Tae K, **Ramesh MS**, **Fadel R**, Big C, Jones J, Flanders SA, and Prescott HC. Impact of Early Corticosteroids on Preventing Clinical Deterioration in Non-critically Ill Patients Hospitalized with COVID-19: A Multi-hospital Cohort Study. *Infect Dis Ther* 2022; 11(2):887-898. PMID: 35267172. Full Text

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INTRODUCTION: While guidelines stronglyrecommend dexamethasone in critical COVID-19, the optimal threshold to initiate corticosteroids in non-critically ill patients with COVID-19 remains unclear. Using data from a state-wide COVID-19 registry, we evaluated the effectiveness of early corticosteroids for preventing clinical deterioration among non-critically ill patients hospitalized for COVID-19 and receiving non-invasive oxygen therapy. METHODS: This was a target trial using observational data from patients hospitalized for COVID-19 at 39 hospitals participating in the MI-COVID19 registry between March 16, 2020 and August 24, 2020. We studied the impact of corticosteroids initiated within 2 calendar days of hospitalization ("early steroids") versus no early steroids among non-ICU patients with laboratory-confirmed SARS-CoV2 receiving non-invasive supplemental oxygen therapy. Our primary outcome was a composite of in-hospital mortality, transfer to intensive care, and receipt of invasive mechanical ventilation. We used inverse probability of treatment weighting (IPTW) and propensity score-weighted regression to measure the association of early steroids and outcomes. RESULTS: Among 1002 patients meeting study criteria, 231 (23.1%) received early steroids. After IPTW, to balance potential confounders between the treatment groups, early steroids were not associated with a decrease in the composite outcome (aOR 1.1, 95%CI 0.8-1.6) or in any components of the primary outcome. CONCLUSION: We found no evidence that early corticosteroid therapy prevents clinical deterioration among hospitalized non-critically ill COVID-19 patients receiving non-invasive oxygen therapy. Further studies are needed to determine the optimal threshold for initiating corticosteroids in this population.

Infectious Diseases

Contreras GA, Munita JM, Simar S, Luterbach C, Dinh AQ, Rydell K, Sahasrabhojane PV, Rios R, Diaz L, **Reyes K**, **Zervos M**, **Misikir HM**, Sanchez-Petitto G, Liu C, Doi Y, Abbo LM, Shimose L, Seifert H, Gudiol C, Barberis F, Pedroza C, Aitken SL, Shelburne SA, van Duin D, Tran TT, Hanson BM, and Arias CA. Contemporary Clinical and Molecular Epidemiology of Vancomycin-Resistant Enterococcal Bacteremia: A Prospective Multicenter Cohort Study (VENOUS I). *Open Forum Infect Dis* 2022; 9(3). PMID: 35155713. Full Text

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BACKGROUND: Vancomycin-resistant enterococci (VRE) are major therapeutic challenges. Prospective contemporary data characterizing the clinical and molecular epidemiology of VRE bloodstream infections (BSIs) are lacking. METHODS: The Vancomycin-Resistant Enterococcal BSI Outcomes Study (VENOUS I) is a prospective observational cohort of adult patients with enterococcal BSI in 11 US hospitals. We included patients with Enterococcus faecalis or Enterococcus faecium BSI with ≥1 follow-up blood culture(s) within 7 days and availability of isolate(s) for further characterization. The primary study outcome was in-hospital mortality. Secondary outcomes were mortality at days 4, 7, 10, 12, and 15 after index blood culture. A desirability of outcome ranking was constructed to assess the association of vancomycin resistance with outcomes. All index isolates were subjected to whole genome sequencing. RESULTS: Forty-two of 232 (18%) patients died in hospital and 39 (17%) exhibited microbiological failure (lack of clearance in the first 4 days). Neutropenia (hazard ratio [HR], 3.13), microbiological failure (HR, 2.4), VRE BSI (HR, 2.13), use of urinary catheter (HR, 1.85), and Pitt BSI score ≥2 (HR, 1.83) were significant predictors of in-hospital mortality. Microbiological failure was the strongest predictor of in-hospital mortality in patients with E faecium bacteremia (HR, 5.03). The impact of vancomycin resistance on mortality in our cohort changed throughout the course of hospitalization. Enterococcus faecalis sequence type 6 was a predominant multidrug-resistant lineage, whereas a heterogeneous genomic population of E faecium was identified. CONCLUSIONS: Failure of early eradication of VRE from the bloodstream is a major factor associated with poor outcomes.

Infectious Diseases
Swaminathan L, **Kaatz S**, Chubb H, Tae K, **Ramesh MS**, **Fadel R**, Big C, Jones J, Flanders SA, and Prescott HC. Impact of Early Corticosteroids on Preventing Clinical Deterioration in Non-critically Ill Patients Hospitalized with COVID-19: A Multi-hospital Cohort Study. *Infect Dis Ther* 2022; 11(2):887-898. PMID: 35267172. Full Text

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INTRODUCTION: While guidelines stronglyrecommend dexamethasone in critical COVID-19, the optimal threshold to initiate corticosteroids in non-critically ill patients with COVID-19 remains unclear. Using data from a state-wide COVID-19 registry, we evaluated the effectiveness of early corticosteroids for preventing clinical deterioration among non-critically ill patients hospitalized for COVID-19 and receiving non-invasive oxygen therapy. METHODS: This was a target trial using observational data from patients hospitalized for COVID-19 at 39 hospitals participating in the MI-COVID19 registry between March 16, 2020 and August 24, 2020. We studied the impact of corticosteroids initiated within 2 calendar days of hospitalization ("early steroids") versus no early steroids among non-ICU patients with laboratory-confirmed SARS-CoV2 receiving non-invasive supplemental oxygen therapy. Our primary outcome was a composite of in-hospital mortality, transfer to intensive care, and receipt of invasive mechanical ventilation. We used inverse probability of treatment weighting (IPTW) and propensity score-weighted regression to measure the association of early steroids and outcomes. RESULTS: Among 1002 patients meeting study criteria, 231 (23.1%) received early steroids. After IPTW, to balance potential confounders between the treatment groups, early steroids were not associated with a decrease in the composite outcome (aOR 1.1, 95%CI 0.8-1.6) or in any components of the primary outcome. CONCLUSION: We found no evidence that early corticosteroid therapy prevents clinical deterioration among hospitalized non-critically ill COVID-19 patients receiving non-invasive oxygen therapy. Further studies are needed to determine the optimal threshold for initiating corticosteroids in this population.

Internal Medicine

Abu Rous F, **Gutta R**, **Li P**, Halmos B, and **Gadgeel S**. Pembrolizumab in Combination with Chemotherapy in Patients with ERBB2-Mutated Non-Small Cell Lung Cancer. *Target Oncol* 2022; Epub ahead of print. PMID: 35312940. Full Text

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BACKGROUND: Human epidermal growth factor receptor 2 (ERBB2) mutation is a known oncogenic driver mutation in a small proportion of non-small cell lung cancers (NSCLCs). Many targeted therapies are being developed and investigated for the treatment of ERBB2-mutated NSCLC, however none of these agents have yet been approved as a front-line treatment. Thus, platinum-based chemotherapy with or without immunotherapy remains the preferred first-line therapy for ERBB2-mutated NSCLC. OBJECTIVE: We aimed to study the activity of chemotherapy in combination with pembrolizumab as first-line treatment in patients with stage IV ERBB2-mutated NSCLC. PATIENTS AND METHODS: We retrospectively identified five patients with ERBB2-mutated NSCLC treated with carboplatin, pemetrexed and pembrolizumab as first-line therapy between 2018 and 2020. Overall survival (OS), progression-free survival (PFS), and time to next therapy (TTNT) were summarized by Kaplan-Meier methodology using R 4.0.5 with median time to event. Response rates defined by partial response (PR) or PR + stable disease (SD) and 95% Clopper-Pearson confidence interval (CI) were calculated. RESULTS: The median age of these five patients was 60 years and all five patients' tumors had ERBB2 mutations-4 had exon 20 mutation and 1 had exon 23 mutation. With a median follow-up of 32 months, the median OS was 24 months, the median PFS was 9 months, and the median TTNT was 9 months. The response rate was 0.6 for PR (Clopper-Pearson exact 95% CI 0.147-0.947) and 0.8 for PR and SD (Clopper-Pearson exact 95% CI 0.284-0.995). No unexpected toxicities were observed. CONCLUSION: In a small number of patients, chemotherapy and pembrolizumab as first-line therapy in ERBB2-mutated NSCLC patients demonstrated activity similar to previous reports with this regimen. Future clinical trials are needed to determine the role of chemotherapy and immunotherapy for this patient population in the context of emerging targeted agents.

Internal Medicine

Al Rifai M, Vaughan EM, Abushamat LA, Lee M, Ramsey DJ, **Gupta K**, Navaneethan SD, and Virani SS. Correlates of Glucagon-Like Peptide-1 Receptor Agonist Use Among Patients With Atherosclerotic Cardiovascular Disease and Type 2 Diabetes Mellitus (from the Department of Veterans Affairs). *Am J Cardiol* 2022; Epub ahead of print. PMID: 35305783. Full Text

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This study used data from the Veterans Affairs administrative and clinical dataset to evaluate determinants of glucagon-like peptide-1 receptor agonist (GLP-1 RA) use among patients with concomitant atherosclerotic cardiovascular disease and diabetes mellitus and an antecedent primary care provider visit. The prevalence of GLP-1 RA use was 8.0%. In multivariable-adjusted models, White race, hypertension, obesity, higher hemoglobin A1c, ischemic heart disease, chronic kidney disease, a higher number of primary care provider visits, and previous cardiology or endocrinology visits were directly associated with GLP-1 RA use. Older age, having a physician primary care provider, and receiving care at a teaching facility were inversely associated with GLP-1 RA use. Our data can help inform targeted interventions to promote equitable access to GLP-1 RA and incentivize the adoption of these disease-modifying agents in high-risk patient populations.

Internal Medicine

Fana M, **Chao S**, and **Katramados AM**. Rituximab for prevention of strokes in cerebral rheumatoid vasculitis. *Clin Neurol Neurosurg* 2022; 215:107199. PMID: 35259677. Full Text

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Rheumatoid arthritis (RA) is an autoimmune disorder which manifests as inflammation of the synovial joints alongside extra-articular involvement. Uncommonly, patients may develop vasculitis of small and medium-sized blood vessels, formally diagnosed as systemic rheumatoid vasculitis (SRV). In particularly rare cases, patients may develop a subtype of SRV known as cerebral rheumatoid vasculitis (CRV) which manifests in patients as stroke. To date, no formal recommendations or guidelines have been established for treatment and prevention of CRV-induced stroke besides experiential therapy with various immunomodulators. Here, we describe the utility of Rituximab in addition to steroids for prevention of stroke in our patient with evidence of multiple CRV-induced strokes with excellent recovery of post-stroke symptoms and remission of new onset cerebral vasculitis processes.

Internal Medicine

Sheth R, **Menon P**, and **Kak V**. A Case of Gemella bergeri Endocarditis and Vertebral Osteomyelitis From Dental Caries. *Infect Dis Clin Pract (Baltim Md)* 2022; 30(2). PMID: Not assigned. Full Text

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Internal Medicine
Swaminathan L, **Kaatz S**, Chubb H, Tae K, **Ramesh MS**, **Fadel R**, Big C, Jones J, Flanders SA, and Prescott HC. Impact of Early Corticosteroids on Preventing Clinical Deterioration in Non-critically Ill Patients Hospitalized with COVID-19: A Multi-hospital Cohort Study. *Infect Dis Ther* 2022; 11(2):887-898. PMID: 35267172. Full Text

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Nephrology
Mansour SG, **Khoury N**, Kodali R, Virmani S, Reese PP, Hall IE, Jia Y, Yamamoto Y, Thiessen-Philbrook HR, Obeid W, Doshi MD, Akalin E, Bromberg JS, Harhay MN, Mohan S, Muthukumar T, Singh P, Weng FL, Moledina DG, Greenberg JH, Wilson FP, and Parikh CR. Clinically adjudicated deceased donor acute kidney injury and graft outcomes. *PLoS One* 2022; 17(3). PMID: 35239694. Full Text

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BACKGROUND: Acute kidney injury (AKI) in deceased donors is not associated with graft failure (GF). We hypothesize that hemodynamic AKI (hAKI) comprises the majority of donor AKI and may explain this lack of association. METHODS: In this ancillary analysis of the Deceased Donor Study, 428 donors with available charts were selected to identify those with and without AKI. AKI cases were classified as hAKI, intrinsic (iAKI), or mixed (mAKI) based on majority adjudication by three nephrologists. We evaluated the associations between AKI phenotypes and delayed graft function (DGF), 1-year eGFR and GF. We also evaluated differences in urine biomarkers among AKI phenotypes. RESULTS: Of the 291 (68%) donors with AKI, 106 (36%) were adjudicated as hAKI, 84 (29%) as iAKI and 101 (35%) as mAKI. Of the 856 potential kidneys, 669 were transplanted with 32% developing DGF and 5% experiencing GF. Median 1-year eGFR was 53 (IQR: 41-70) ml/min/1.73m2. Compared to non-AKI, donors with iAKI had higher odds DGF [aOR (95%CI); 4.83 (2.29, 10.22)] and had lower 1-year eGFR [adjusted B coefficient (95% CI): -11 (-19, -3) mL/min/1.73 m2]. hAKI and mAKI were not associated with DGF or 1-year eGFR. Rates of GF were not different among AKI phenotypes and non-AKI. Urine biomarkers such as NGAL, LFABP, MCP-1, YKL-40, cystatin-C and albumin were higher in iAKI. CONCLUSION: iAKI was associated with higher DGF and lower 1-year eGFR but not with GF. Clinically phenotyped donor AKI is biologically different based on biomarkers and may help inform decisions regarding organ utilization.

Nephrology
Nair D, Brereton L, Hoge C, Plantinga LC, Agrawal V, Soman SS, Choi MJ, Jaar BG, **Soman S**, Jaar B, Abdel-Kader K, Adey D, Agrawal V, Beers K, Cavanaugh K, Choi MJ, Diamantidis CJ, Estrella M, Greer R, Krishnan N, Nair D, Plantinga L, Schell J, Simon J, and Sperati J. Burnout Among Nephrologists in the United States: A Survey Study. *Kidney Med* 2022; 4(3). PMID: Not assigned. Full Text

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Rationale & Objective: Burnout decreases job satisfaction and leads to poor patient outcomes but remains underinvestigated in nephrology. We explored the prevalence and determinants of burnout among a sample of nephrologists. Study Design: Cross-sectional. Setting & Participants: The nephrologists were approached via the American Medical Association Physicians Masterfile, National Kidney Foundation listserv, email, and social media between April and August 2019. The predictors were demographics and practice characteristics. The outcome was burnout, defined as responding “once a week” or more on either 1 of the 2 validated measures of emotional exhaustion and depersonalization or both. Analytical Approach: Participant characteristics were tabulated. Responses were compared using $\chi 2$ tests. Multivariable logistic regression was used to estimate the odds ratios (ORs) of burnout for risk factors. Free text responses were thematically analyzed. Results: About half of 457 respondents were 40-59 years old (n=225; 49.2%), and the respondents were more predominantly men (n=296; 64.8%), US medical graduates (n=285; 62.4%), and in academic practice (n=286; 62.6%). Overall, 106 (23.2%) reported burnout. The most commonly reported primary drivers of burnout were the number of hours worked (n=27; 25.5%) and electronic health record requirements (n=26; 24.5%). Caring for ≤25 versus 26-75 patients per week (OR, 0.34; 95% confidence interval [95% CI], 0.15-0.77), practicing in academic versus nonacademic settings (OR, 0.33; 95% CI, 0.21-0.54), and spending time on other responsibilities versus patient care (OR, 0.32; 95% CI, 0.17-0.61) were each independently associated with nearly 70% lower odds of burnout after adjusting for age, sex, race, and international medical graduate status. The free text responses emphasized disinterested health care systems and dissatisfaction with remuneration as the drivers of burnout. Limitations: Inability to precisely capture response rate. Conclusions: Nearly one-quarter of the nephrologists in our sample reported burnout. Future studies should qualitatively investigate how the care setting, time spent on electronic medical records, and hours of clinical care drive burnout and explore other system-level drivers of burnout in nephrology.

Neurology

Bang OY, Kim EH, Cho YH, Oh MJ, Chung JW, Chang WH, Kim YH, Yang SW, and **Chopp M**. Circulating Extracellular Vesicles in Stroke Patients Treated With Mesenchymal Stem Cells: A Biomarker Analysis of a Randomized Trial. *Stroke* 2022; Epub ahead of print. PMID: 35341320. Full Text

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BACKGROUND: Mesenchymal stem cells (MSCs) secrete trophic factors and extracellular vesicles (EVs). However, the level and role of EVs after MSC therapy in patients with stroke are unknown. We investigated whether circulating EVs and trophic factors are increased after MSCs and are related to the therapeutic benefits in the STARTING-2 trial (Stem Cell Application Researches and Trials in Neurology-2) participants. METHODS: In this prospective randomized controlled trial, patients with chronic major stroke were assigned, in a 2:1 ratio, to receive autologous MSC intravenous injection (MSC group, n=39) or standard treatment (control group, n=15) and followed for 3 months. Detailed clinical assessment and neuroplasticity on diffusion tensor image and resting-state functional magnetic resonance imaging were evaluated. Serial samples were collected, before/after MSCs therapy. The primary outcome measure was circulating factors that are associated with the clinical improvement in the Fugl-Meyer Assessment (secondary end point of the trial) and neuroplasticity on diffusion tensor image and resting-state functional magnetic resonance imaging. Additional outcome measures were microRNAs and trophic factors

enriched in the plasma EVs, obtained using quantitative polymerase chain reaction and ELISA, respectively. RESULTS: Circulating EV levels were increased ≈5-fold (mean±SD, from 2.7×10(9)±2.2×10(9) to 1.3×10(10)±1.7×10(10) EVs/mL) within 24 hours after injection of MSCs (P=0.001). After adjustment of age, sex, baseline stroke severity, and the time interval from stroke onset to treatment, only the EV number was independently associated with improvement in motor function (odds ratio, 5.718 for EV number(Log) [95% CI, 1.144-28.589]; P=0.034). Diffusion tensor image and resting-state functional magnetic resonance imaging showed that integrity of the ipsilesional corticospinal tract and intrahemispheric motor network were significantly correlated with circulating EV levels, respectively (P<0.05). MicroRNAs related to neurogenesis/neuroplasticity (eg, microRNA-18a-5p) were significantly increased in circulating EVs after MSC therapy (P=0.0479). In contrast, trophic factor levels were not changed after MSC therapy. CONCLUSIONS: This trial is the first to show that treatment of ischemic stroke patients with MSCs significantly increases circulating EVs, which were significantly correlated with improvement in motor function and magnetic resonance imaging indices of plasticity. REGISTRATION: URL: https://wwww. CLINICALTRIALS: gov; Unique identifier: NCT01716481.

Neurology

Diaczok B, Nair G, **Lin CH**, Paxton JH, Abbas A, **Barkley G**, **O'Neil B**, **O'Neil W**, Patel K, Sims M, **Poisson L**, and Sule AA. Evolution of prescribing practices and outcomes in the COVID-19 pandemic in metropolitan areas. *Infez Med* 2022; 30(1):86-95. PMID: 35350268. Full Text

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INTRODUCTION: We wanted to characterize the evolution of the COVID-19 pandemic in a typical metropolitan area. METHODS: Data were extracted from the Detroit COVID-19 Consortium database for hospitalized COVID-19 patients treated in Southeast Michigan over the 12-month period from March 2020 to February 2021. Demographic and outcomes data were compared to CDC data. RESULTS: A total of 4,775 patients were enrolled during the study period. We divided the pandemic into three phases: Phase-1 (Spring Surge); Phase-2 (Summer Lull); and Phase-3 (Fall Spike). Changes in hydroxychloroquine, remdesivir, corticosteroid, antibiotic and anticoagulant use closely followed publication of landmark studies. Mortality in critically-ill patients decreased significantly from Phase-1 to Phase-3 (60.3% vs. 47.9%, Chisq p=0.0110). Monthly mortality of all hospitalized patients ranged between 14.8% - 21.5% during Phase-1 and 9.7 to 13.4% during Phase 3 (NS). DISCUSSION: The COVID-19 pandemic presented in three unique phases in Southeast Michigan. Medical systems rapidly modified treatment plans, often preceding CDC and NIH recommendations. Despite improved treatment regimens, intubation rates and mortality for hospitalized patients remained elevated. CONCLUSION: Preventive measures aimed at reducing hospitalizations for COVID-19 should be emphasized.

Neurology

Fana M, **Chao S**, and **Katramados AM**. Rituximab for prevention of strokes in cerebral rheumatoid vasculitis. *Clin Neurol Neurosurg* 2022; 215:107199. PMID: 35259677. Full Text

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Rheumatoid arthritis (RA) is an autoimmune disorder which manifests as inflammation of the synovial joints alongside extra-articular involvement. Uncommonly, patients may develop vasculitis of small and medium-sized blood vessels, formally diagnosed as systemic rheumatoid vasculitis (SRV). In particularly rare cases, patients may develop a subtype of SRV known as cerebral rheumatoid vasculitis (CRV) which manifests in patients as stroke. To date, no formal recommendations or guidelines have been established for treatment and prevention of CRV-induced stroke besides experiential therapy with various immunomodulators. Here, we describe the utility of Rituximab in addition to steroids for prevention of stroke in our patient with evidence of multiple CRV-induced strokes with excellent recovery of post-stroke symptoms and remission of new onset cerebral vasculitis processes.

Neurology
Memon AB, **Al-Hader R**, **Sherburn F**, and **Corrigan J**. Clinical and radiographic course of a patient with late-onset, rapidly progressive, MRI-negative myelitis after COVID-19 illness. *Clin Neurol Neurosurg* 2022; 214:107152. PMID: 35131662. Full Text

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Neurology
Udumula MP, **Poisson LM**, **Dutta I**, **Tiwari N**, Kim S, **Chinna-Shankar J**, **Allo G**, Sakr S, **Hijaz M**, **Munkarah AR**, **Giri S**, and **Rattan R**. Divergent Metabolic Effects of Metformin Merge to Enhance Eicosapentaenoic Acid Metabolism and Inhibit Ovarian Cancer In Vivo. *Cancers (Basel)* 2022; 14(6). PMID: 35326656. Full Text

Department of Women's Health Services, Henry Ford Hospital, Henry Ford Cancer Institute, Detroit, MI 48202, USA.
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Metformin is being actively repurposed for the treatment of gynecologic malignancies including ovarian cancer. We investigated if metformin induces analogous metabolic changes across ovarian cancer cells. Functional metabolic analysis showed metformin caused an immediate and sustained decrease in oxygen consumption while increasing glycolysis across A2780, C200, and SKOV3ip cell lines. Untargeted metabolomics showed metformin to have differential effects on glycolysis and TCA cycle metabolites, while consistent increased fatty acid oxidation intermediates were observed across the three cell lines. Metabolite set enrichment analysis showed alpha-linolenic/linoleic acid metabolism as being most upregulated. Downstream mediators of the alpha-linolenic/linoleic acid metabolism, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), were abundant in all three cell lines. EPA was more effective in inhibiting SKOV3 and CaOV3 xenografts, which correlated with inhibition of inflammatory markers and indicated a role for EPA-derived specialized pro-resolving mediators such as Resolvin E1. Thus, modulation of the metabolism of omega-3 fatty acids and their anti-inflammatory signaling molecules appears to be one of the common mechanisms of metformin's antitumor activity. The distinct metabolic signature of the tumors may indicate metformin response and aid the preclinical and clinical interpretation of metformin therapy in ovarian and other cancers.

Neurosurgery

Aquino VM, **Rock JP**, **Perry KD**, and **Barbetta BT**. Functional reconstruction of the glenoid fossa utilizing a pedicled temporal osteomuscular flap. *Oral Maxillofac Surg Cases* 2022; 8(1). PMID: Not assigned. Full Text

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Current techniques in management of end stage pathology of the temporomandibular joint (TMJ) include the use of alloplastic joint reconstruction. A polyethylene glenoid fossa prosthesis is a necessity of this treatment as it provides a stable platform for function of the metal alloy condylar head. Additionally, the fossa prosthesis limits superior and posterior movement of the reconstructed joint which prevents complications such as migration of the condylar prosthesis into the middle cranial fossa and ear, ankylosis, and pain. When a pathologic process affects the glenoid fossa alone, alloplastic joint reconstruction becomes a less desirable treatment option. Lack of osseous structure along the temporal bone and zygomatic arch can impact the surgeon's ability to fixate a glenoid fossa prosthesis. Additionally, resection of an uninvolved condylar head in situations where there is no advanced pathology would provide a functional solution, but may be overly aggressive and potentially unnecessary. The following is our experience with utilizing a pedicled temporal osteomuscular flap to reconstruct an acquired defect of the glenoid fossa in a 42-year-old male with a diffuse-type tenosynovial giant cell tumor. In this case the mandibular condyle was not affected by the pathology.

Neurosurgery

Gummadavelli A, Englot DJ, **Schwalb JM**, Wu C, Gonzalez-Martinez J, Niemat J, and Gerrard JL. ASSFN Position Statement on Deep Brain Stimulation for Medication-Refractory Epilepsy. *Neurosurgery* 2022; Epub ahead of print. PMID: 35271523. Full Text

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Neuromodulation has taken a foothold in the landscape of surgical treatment for medically refractory epilepsies and offers additional surgical treatment options for patients who are not candidates for resective/ablative surgery. Approximately one third of patients with epilepsy suffer with medication-refractory epilepsy. A persistent underuse of epilepsy surgery exists. Neuromodulation treatments including deep brain stimulation (DBS) expand the surgical options for patients with epilepsy and provide options for patients who are not candidates for resective surgery. DBS of the bilateral anterior nucleus of the thalamus is an Food and Drug Administration-approved, safe, and efficacious treatment option for patients with refractory focal epilepsy. The purpose of this consensus position statement is to summarize evidence, provide recommendations, and identify indications and populations for future investigation in DBS for epilepsy. The recommendations of the American Society of Functional and Stereotactic Neurosurgeons are based on several randomized and blinded clinical trials with high-quality data to support the use of DBS to the anterior nucleus of the thalamus for the treatment of refractory focal-onset seizures.

Neurosurgery

Haider SA, **Levy S**, **Rock JP**, and **Craig JR**. Prolactinoma: Medical and Surgical Considerations. *Otolaryngol Clin North Am* 2022; Epub ahead of print. PMID: 35256169. Full Text

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Prolactinomas are the most common secretory tumor of the pituitary gland. Clinical symptoms may be due to prolactin oversecretion, localized mass effect, or a combination of both. Although the mainstay of prolactinoma management is medical therapy with dopamine agonists, endoscopic endonasal or transcranial surgery, radiation therapy, or a combination of these is an important treatment option in select cases. This article discusses prolactinoma phenotypes, clinical presentations, and clinically pertinent medical and surgical considerations when managing these tumors.

Neurosurgery
Hamilton T, and **Chang V**. Commentary: A Novel Mobile-Device-Based Navigation System for Placement of Posterior Spinal Fixation. *Oper Neurosurg (Hagerstown)* 2022; Epub ahead of print. PMID: 35315832. Full Text

Department of Neurosurgery, Henry Ford Hospital, Detroit, Michigan, USA.

Neurosurgery
Jabbour P, Dmytriw AA, Sweid A, Piotin M, Bekelis K, Sourour N, Raz E, Linfante I, Dabus G, **Kole M**, Martínez-Galdámez M, Nimjee SM, Lopes DK, Hassan AE, Kan P, Ghorbani M, Levitt MR, Escalard S, Missios S, Shapiro M, Clarençon F, Elhorany M, Vela-Duarte D, Tahir RA, Youssef PP, Pandey AS, Starke RM, El Naamani K, Abbas R, Hammoud B, Mansour OY, Galvan J, Billingsley JT, Mortazavi A, Walker M, Dibas M, Settecase F, Heran MKS, Kuhn AL, Puri AS, Menon BK, Sivakumar S, Mowla A, D'Amato S, Zha AM, Cooke D, Goyal M, Wu H, Cohen J, Turkel-Parrella D, Xavier A, Waqas M, Tutino VM, Siddiqui A, Gupta G, Nanda A, Khandelwal P, Tiu C, Portela PC, Perez de la Ossa N, Urra X, de Lera M, Arenillas JF, Ribo M, Requena M, Piano M, Pero G, De Sousa K, Al-Mufti F, Hashim Z, Nayak S, Renieri L, Aziz-Sultan MA, Nguyen TN, Feineigle P, Patel AB, Siegler JE, Badih K, Grossberg JA, Saad H, Gooch MR, Herial NA, Rosenwasser RH, Tjoumakaris S, and Tiwari A. Characteristics of a COVID-19 Cohort With Large Vessel Occlusion: A Multicenter International Study. *Neurosurgery* 2022; Epub ahead of print. PMID: 35238817. Full Text

BACKGROUND: The mechanisms and outcomes in coronavirus disease (COVID-19)-associated stroke are unique from those of non-COVID-19 stroke. OBJECTIVE: To describe the efficacy and outcomes of acute revascularization of large vessel occlusion (LVO) in the setting of COVID-19 in an international cohort. METHODS: We conducted an international multicenter retrospective study of consecutively admitted patients with COVID-19 with concomitant acute LVO across 50 comprehensive stroke centers. Our control group constituted historical controls of patients presenting with LVO and receiving a mechanical thrombectomy between January 2018 and December 2020. RESULTS: The total cohort was 575 patients with acute LVO; 194 patients had COVID-19 while 381 patients did not. Patients in the COVID-19 group were younger (62.5 vs 71.2; P < .001) and lacked vascular risk factors (49, 25.3% vs 54, 14.2%; P = .001). Modified thrombolysis in cerebral infarction 3 revascularization was less common in the COVID-19 group (74, 39.2% vs 252, 67.2%; P < .001). Poor functional outcome at discharge (defined as modified Ranklin Scale 3-6) was more common in the COVID-19 group (150, 79.8% vs 132, 66.7%; P = .004). COVID-19 was independently associated with a lower likelihood of achieving modified thrombolysis in cerebral infarction 3 (odds ratio [OR]: 0.4, 95% CI: 0.2-0.7; P < .001) and unfavorable outcomes (OR: 2.5, 95% CI: 1.4-4.5; P = .002). CONCLUSION: COVID-19 was an independent predictor of incomplete revascularization and poor outcomes in patients with stroke due to LVO. Patients with COVID-19 with LVO were younger, had fewer cerebrovascular risk factors, and suffered from higher morbidity/mortality rates.

Neurosurgery
Plonsker JH, Benzil D, **Air EL**, Woodrow S, Stippler M, and Ben-Haim S. Gender Equality in Neurosurgery and Strategic Goals Toward a More Balanced Workforce. *Neurosurgery* 2022; Epub ahead of print. PMID: 35311744. Full Text

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The Women in Neurosurgery (WINS) and the American Association of Neurological Surgeons published a white paper in 2008 setting an ambitious goal for women to comprise 20% of neurosurgery residents by 2012 and 20% of practicing neurosurgeons by 2020. Although there has been steady progress, we have fallen short of these benchmarks. We take this opportunity to look back at the accomplishments made over the past decade and provide an update on our present status. We evaluate current barriers toward progress and propose new goals, highlighting the systemic changes necessary to accomplish them. We propose the following updated recommendations to recruit and retain diverse talent into the neurosurgical workforce. (1) Neurosurgical departments and societies should provide diverse, early formal mentorship opportunities for medical students, residents, and junior faculty members. (2) Parental leave policies must be delineated, promoted, and enforced for all neurosurgeons, with greater awareness of internal discrimination and normalization of the discussion surrounding this topic. (3) We need to strive for compensation equity, with transparency in compensation mechanisms and regular assessment of compensation metrics. (4) Departments and institutions must have a zero-tolerance policy for sexual harassment and discrimination and establish a safe reporting structure. Finally, we propose attainable benchmarks toward achieving gender balance in the neurosurgical workforce, with a goal for women to comprise 30% of the entering residency class by 2030 and to comprise 30% of practicing neurosurgeons by 2038. We hope that this will guide further progress toward our future of building a balanced workforce.

Nursing

Simanovski J, and Ralph J. A Scoping Review of the Literature on Sleep Quality in Adult Lung Transplant Recipients. *Prog Transplant* 2022; Epub ahead of print. PMID: 35301887. Full Text

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Introduction: Lung transplant recipients face challenging postoperative complications and are at risk for poor sleep quality. Sleep quality, as a complex clinical phenomenon, has multiple subjective and objective connotations. Measures and definitions of sleep quality are not standardized. Objective: A scoping review methodology was used to systematically map the relevant literature, provide an overview of available sleep quality measures, and to identify knowledge gaps. Methods: A systematic search of published and gray literature enabled knowledge synthesis of the last 10 years of evidence documenting sleep quality in lung transplant recipients. The search revealed 246 articles with only 12 sources meeting the eligibility criteria. Results: Sources varied in terms of definitions and measures of sleep quality. Subjective, objective, or a combination of both measures were used across the relevant literature with findings confirming that poor sleep quality was common in lung transplant recipients. Significant associations with poor sleep quality included younger age, female gender, exposure to tacrolimus, anxiety, and depression. Discussion: Systematic literature assessing sleep quality in lung transplant recipients is sparse and lacks conceptual and operational definitions. Future research can focus on designing prospective observational studies. Subjective and objective measures for sleep quality need to be validated in lung transplant recipients. Further rigorous research is needed to standardize measures of sleep quality and to further examine potential risk factors that affect sleep after lung transplantation.

Obstetrics, Gynecology and Women's Health Services

Daviskiba S, Shuman H, **Ayyash M**, **Vadlamudi G**, **Smietana S**, and **Goyert G**. A multidisciplinary approach to caring for a pregnant patient with blue rubber bleb nevus syndrome: A case report. *Case Rep Womens Health* 2022; 34:e00403. PMID: 35299692. Full Text

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Blue rubber bleb nevus syndrome (BRBNS) is a rare vascular disorder characterized by recurrent, multifocal venous malformations throughout the skin, soft tissue, and numerous internal organs. Pregnant women with BRBNS are at high risk of morbidity and mortality, and thus their care requires careful planning and surveillance. This report highlights the case of a 21-year-old woman, gravida 1, para 0, with BRBNS who was cared for by a multidisciplinary team of providers in obstetrics, maternal-fetal medicine, obstetric anesthesia, hematology, dermatology, gastroenterology, and otorhinolaryngology. The report provides a comprehensive guide to the multidisciplinary management of pregnancy and delivery for patients with BRBNS.

Obstetrics, Gynecology and Women's Health Services

Udumula MP, **Poisson LM**, **Dutta I**, **Tiwari N**, Kim S, **Chinna-Shankar J**, **Allo G**, Sakr S, **Hijaz M**, **Munkarah AR**, **Giri S**, and **Rattan R**. Divergent Metabolic Effects of Metformin Merge to Enhance Eicosapentaenoic Acid Metabolism and Inhibit Ovarian Cancer In Vivo. *Cancers (Basel)* 2022; 14(6). PMID: 35326656. Full Text

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Metformin is being actively repurposed for the treatment of gynecologic malignancies including ovarian cancer. We investigated if metformin induces analogous metabolic changes across ovarian cancer cells. Functional metabolic analysis showed metformin caused an immediate and sustained decrease in oxygen consumption while increasing glycolysis across A2780, C200, and SKOV3ip cell lines. Untargeted metabolomics showed metformin to have differential effects on glycolysis and TCA cycle metabolites, while consistent increased fatty acid oxidation intermediates were observed across the three cell lines. Metabolite set enrichment analysis showed alpha-linolenic/linoleic acid metabolism as being most upregulated. Downstream mediators of the alpha-linolenic/linoleic acid metabolism, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), were abundant in all three cell lines. EPA was more effective in inhibiting SKOV3 and CaOV3 xenografts, which correlated with inhibition of inflammatory markers and indicated a role for EPA-derived specialized pro-resolving mediators such as Resolvin E1. Thus, modulation of the metabolism of omega-3 fatty acids and their anti-inflammatory signaling molecules appears to be one of the common mechanisms of metformin's antitumor activity. The distinct metabolic signature of the tumors may indicate metformin response and aid the preclinical and clinical interpretation of metformin therapy in ovarian and other cancers.

Orthopedics/Bone and Joint Center

Ali SA, Espin-Garcia O, Wong AK, Potla P, Pastrello C, McIntyre M, Lively S, Jurisica I, Gandhi R, and Kapoor M. Circulating microRNAs differentiate fast-progressing from slow-progressing and non-progressing knee osteoarthritis in the Osteoarthritis Initiative cohort. *Ther Adv Musculoskelet Dis* 2022; 14. PMID: 35321117. Full Text

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Osteoarthritis Research Program, Division of Orthopaedics, Schroeder Arthritis Institute, University Health Network, Toronto, ON, Canada.
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INTRODUCTION: The objective of this study is to identify circulating microRNAs that distinguish fast-progressing radiographic knee osteoarthritis (OA) in the Osteoarthritis Initiative cohort by applying microRNA-sequencing. METHODS: Participants with Kellgren-Lawrence (KL) grade 0/1 at baseline were included (N = 106). Fast-progressors were defined by an increase to KL 3/4 by 4-year follow-up (N = 20), whereas slow-progressors showed an increase to KL 2/3/4 only at 8-year follow-up (N = 35). Non-progressors remained at KL 0/1 by 8-year follow-up (N = 51). MicroRNA-sequencing was performed on plasma collected at baseline and 4-year follow-up from the same participants. Negative binomial models were fitted to identify differentially expressed (DE) microRNAs. Penalized logistic regression (PLR) analyses were performed to select combinations of DE microRNAs that distinguished fast-progressors. Area under the receiver operating characteristic curves (AUC) were constructed to evaluate predictive ability. RESULTS: DE analyses revealed 48 microRNAs at baseline and 2 microRNAs at 4-year follow-up [false discovery rate (FDR) < 0.05] comparing fast-progressors with both slow-progressors and non-progressors. Among these were hsa-miR-320b, hsa-miR-320c, hsa-miR-320d, and hsa-miR-320e, which were predicted to target gene families, including members of the 14-3-3 gene family, involved in signal transduction. PLR models included miR-320 members as top predictors of fast-progressors and yielded AUC ranging from 82.6 to 91.9, representing good accuracy. CONCLUSION: The miR-320 family is associated with fast-progressing radiographic knee OA and merits further investigation as potential biomarkers and mechanistic drivers of knee OA.

Orthopedics/Bone and Joint Center

Kadado A, **Shaw JH**, Ayoola AS, Akioyamen NO, **North WT**, and **Charters MA**. Effects of Preoperative Carbohydrate-rich Drinks on Immediate Postoperative Outcomes in Total Knee Arthroplasty: A Randomized Controlled Trial. *J Am Acad Orthop Surg* 2022; Epub ahead of print. PMID: 35312650. Full Text

From Department of Orthopaedics, Henry Ford Hospital, Detroit, MI (Shaw, North, and Charters), Department of Orthopaedics, Nationwide Children's Hospital, Columbus, OH (Kadado), Department of Orthopaedics, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI (Ayoola), and Department of Orthopaedics, Montefiore Medical Center, Bronx, NY (Akioyamen).

BACKGROUND: This study investigates the effects of preoperative carbohydrate-rich drinks on postoperative outcomes after primary total knee arthroplasty. METHODS: We prospectively randomized 153 consecutive patients undergoing primary total knee arthroplasty at one institution. Patients were assigned to one of three groups: group A (50 patients) received a carbohydrate-rich drink; group B (51 patients) received a placebo drink; and group C (52 patients) did not receive a drink (control). All healthcare personnel and patients were blinded to group allocation. Controlling for demographics, we analyzed the rate of postoperative nausea and vomiting, length of stay, opiate consumption, pain scores, serum glucose, adverse events, and intraoperative and postoperative fluid intake. RESULTS: Demographics and comorbidities were similar among the groups. There were no significant differences in surgical interventions or experience. Surgical fluid intake and total blood loss were similar among the three groups (P = 0.47, P = 0.23). Furthermore, acute postoperative outcomes (ie, pain, episodes of nausea, and length of stay) were similar across all three groups. There were no significant differences in adverse events between the three groups (P = 0.13). There was a significant difference in one-time postoperative bolus between the three groups (P = 0.02), but after multivariate analysis, it did not demonstrate significance. None of the intervention group were readmitted, whereas 5.9% and 11.5% were readmitted in the placebo and control groups, respectively (P = 0.047). The chance of 90-day readmission was reduced in group A compared with group C (odds ratio, 0.08; 95% confidence interval, 0.01 to 0.72; P = 0.02). There were no differences in other postoperative outcome measurements. CONCLUSION: This randomized controlled trial demonstrated that preoperative carbohydrate loading does not improve immediate postoperative outcomes, such as nausea and vomiting; however, it demonstrated that consuming fluid preoperatively proved no increased risk of adverse outcomes and there was a trend toward decrease of one-time boluses postoperatively. CLINICAL TRIALS REGISTRY: NCT03380754.

Orthopedics/Bone and Joint Center

Klag EA, **Lizzio VA**, **Charters MA**, Ayoola AS, Wesemann L, **Banka TR**, and **North WT**. Increased Accuracy in Templating for Total Knee Arthroplasty Using 3D Models Generated from Radiographs. *J Knee Surg* 2022; Epub ahead of print. PMID: 35240715. Full Text

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Templating prior to total hip arthroplasty is a widely adopted practice that aims to improve operative efficiency and reduce clinical outliers. Predicting implant size before total knee arthroplasty (TKA), although less common, could increase operating room efficiency by reducing necessary equipment needed for the procedure. This study compared templating accuracy in TKA using two-dimensional (2D) digital radiographs to a novel imaging technology that generates a three-dimensional (3D) model from these 2D radiographs. Two hundred and two robotic-assisted primary TKA surgical cases using Persona Knee System (Zimmer Biomet, Warsaw, IN) were retrospectively analyzed. For all cases, 3D templating was completed preoperatively using a novel radiographic image acquisition protocol. Using the same radiographs, the knee was templated using a 2D digital templating program. All surgeons were blinded to the final implant sizes, and all templating was done independently. The accuracy of predictions within ± 1 from the final implant size was determined for the femoral and tibial components. The accuracy (within 1 size) of tibial size predictions was comparable between attending surgeons and residents (87 vs. 82%, $p = 0.08$), but attending surgeons more accurately predicted the femoral size (77 vs. 60%, $p < 0.05$). The 2D to 3D imaging technology more accurately predicted both tibial and femoral sizes compared with the attending surgeons (99.5 vs. 87%, $p < 0.05$; 84% vs. 77%, $p < 0.05$). However, the imaging technology, attending surgeons, and residents were all more likely to overestimate femur size ($p < 0.05$). Moreover, the 3D imaging technology predicted the exact tibial component size in 93.1% of cases, which was significantly greater compared with residents (40%, $p < 0.01$) and attending surgeons (53%, $p < 0.01$). The 2D to 3D imaging technology more accurately predicted tibial and femoral component sizes compared with 2D digital templating done by surgeons. All templating predictions were more accurate for the tibial implant size than for the femoral size. The increased accuracy of implant size predictions from this 3D templating technology has the potential to improve intraoperative efficiency and minimize costs and surgical time.

Orthopedics/Bone and Joint Center

Warren JR, Pietroski AD, Franovic S, Ziedas A, Yedulla N, Makhni EC, and **Muh SJ**. Characterizing MCID and assessing the role of preoperative PROMIS scores in predicting outcomes for reverse total shoulder arthroplasty at 2-year follow-up. *Semin Arthroplasty* 2022; 32(1):29-35. PMID: Not assigned. Full Text

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Background: The Patient-Reported Outcomes Measurement Information System (PROMIS) has gained more ground as a reliable and efficient means of collecting patient outcomes in different shoulder surgeries. The purpose of this study is to determine if preoperative PROMIS scores are able to predict improvement in postoperative PROMIS scores and anchor this data to determine if a patient will achieve MCID after reverse total shoulder arthroplasty (RTSA). We hypothesize that preoperative PROMIS will significantly correlate, with anchor questions allowing clinicians to predict which patients are most likely to achieve MCID after RTSA. Methods: Three PROMIS CAT forms (PROMIS Upper Extremity Physical Function CAT v2.0 (“PROMIS-UE”), PROMIS Pain Interference v1.1 (“PROMIS-PI”), and PROMIS Depression v1.0 (“PROMIS-D”)) were provided to all patients scheduled to undergo RTSA by board-certified shoulder and elbow surgeons at 1 institution. Demographic data was collected, including age, median household income, zip code, body mass index, sex, smoking status, and race. All patients enrolled in the study were contacted and asked the same 3 anchor questions pertaining to the 3 PROMIS CAT forms above. Results: A total of 71 patients (52.1% male) were included in our cohort with an average age of 67.8 years (standard deviation, 8.4). Mean follow-up time point was 21.4 months (standard deviation, 9.9) after surgery. Neither preoperative PROMIS-UE, nor preoperative PROMIS-PI

showed any significant predictive ability to achieve their respective domain MCIDs (AUC: 0.564 and 0.631, respectively). PROMIS-UE and PROMIS-PI improved to a significant degree at an average 21.4 months postoperatively from 29.2 ± 5.8 and 63.8 ± 4.8 to 39.8.9 ± 8.9 and 50.0 ± 9.7, respectively. Improvements in PRMOIS-D scores were insignificant at average 21.4 months (Baseline: 49.8 ± 8.0 vs. 44.5 ± 9.4 at final follow-up). Using anchor-based analysis to determine MCID, we found the following MCID values for PROMIS-UE, PROMIS-PI, and PROMIS-D: 7.0, -6.6, and -3.9, respectively. ROC analysis revealed MCID values for PROMIS-UE, PI, and D as 7.0, -6.6, and -3.9 respectively (AUC: 0.743, 0.805, 0.601). SCB values for PROMIS-UE, PI, and D were identified as 8.4, -12.1, and -4.0, respectively (AUC: 0.883, 0.932, 0.652). Conclusions: PROMIS-UE and PROMIS-PI questionnaires can adequately assess the symptoms and outcomes of RTSA patients out to two years postoperatively. Preoperative baseline PROMIS-UE, PROMIS-PI, and PROMIS-D scores cannot adequately predict achievement of MCID in patients indicated for primary RTSA when using anchor-based methods at final follow-up, and should not be used to counsel patients on surgery or guide postoperative treatment. Level of Evidence: Level II

Orthopedics/Bone and Joint Center

Yedulla NR, **Battista EB**, **Koolmees DS**, **Montgomery ZA**, and **Day CS**. Workplace-related musculoskeletal injury trends in the United States from 1992 to 2018. *Injury* 2022; Epub ahead of print. PMID: 35331477. Full Text

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INTRODUCTION: The purpose of our study is to assess workplace-related musculoskeletal (wrMSK) injury trends by utilizing Bureau of Labor Statistics (BLS) data. We hypothesize that trunk injuries are the most commonly reported, injuries occur most frequently in the manufacturing sector, and that injury type occurrence differs according to body region affected. METHODS: This study assessed wrMSK injury data provided by the BLS from 1992 to 2018. The three main body regions analyzed were lower extremity (LE), upper extremity (UE), and trunk. Injury data was also assessed by industrial sector (Agriculture, Manufacturing, Healthcare, and Construction) and injury type (fractures, multiple injuries, sprains/strains/tears, tendonitis, cuts/lacerations, pain/soreness, and bruises). Negative binomial regression and pairwise comparisons with a Benjamini-Hochberg adjustment were utilized to compare calculated incidence rate ratios for wrMSK injuries. Exponentiated beta estimates were used to calculate the estimated annual percent changes of wrMSK injuries within each industrial sector. RESULTS: Occurrence of wrMSK injuries from 1992 to 2018 was significantly lower for LE when compared to both upper extremity and trunk ($p < 0.001$). Manufacturing is shown to be the industry with the most wrMSK injuries in each of UE, LE, and trunk. wrMSK injuries were shown to decrease in each industrial sector over the timespan assessed, with the greatest percent change occurring in the manufacturing sector. Lacerations and tendonitis were the most common diagnosis types in UE, while pain/soreness and strains/sprains/tears were most common in trunk and bruises were most common in LE. DISCUSSION: From 1992 to 2018, trunk injuries were the most frequently occurring wrMSK injury, but not to a significantly higher degree than upper extremity injuries. wrMSK injury types that may require orthopedic surgical care affect specific body regions to different degrees, with cuts/lacerations and tendonitis most commonly affecting the upper extremity. Thus, it appears that wrMSK injuries in the upper extremity are of particular importance from an orthopedic care perspective.

Otolaryngology – Head and Neck Surgery

Diercks GR, Rastatter JC, Kazahaya K, Kamani D, Quintanilla-Dieck L, Shindo ML, Hartnick C, Shin JJ, **Singer MC**, Stack BC, Jr., Chen AY, St John MA, Scharpf J, Agrawal N, Jayawardena ADL, Iwata AJ, Okose O, Wang B, McIlroy D, Cheung A, Wu CW, Chiang FY, Dionigi G, Barczynski M, Brauckhoff K, Lorenz K, Hartl D, Tolley N, Brooks JA, Schneider R, Dralle H, Abdelhamid Ahmed AH, and Randolph GW. Pediatric intraoperative nerve monitoring during thyroid surgery: A review from the American Head and Neck Society Endocrine Surgery Section and the International Neural Monitoring Study Group. *Head Neck* 2022; Epub ahead of print. PMID: 35261110. Full Text

Children are more likely to experience recurrent laryngeal nerve (RLN) injury during thyroid surgery. Intraoperative nerve monitoring (IONM) may assist in nerve identification and surgical decision making. A literature review of pediatric IONM was performed and used to inform a monitoring technique guide and expert opinion statements. Pediatric IONM is achieved using a variety of methods. When age-appropriate endotracheal tubes with integrated surface electrodes are not available, an alternative method should be used. Patient age and surgeon experience with laryngoscopy influence technique selection; four techniques are described in detail. Surgeons must be familiar with the nuances of monitoring technique and interpretation; opinion statements address optimizing this technology in children. Adult IONM guidelines may offer strategies for surgical decision making in children. In some cases, delay of second-sided surgery may reduce bilateral RLN injury risk.

Otolaryngology – Head and Neck Surgery

Haider SA, **Levy S**, **Rock JP**, and **Craig JR**. Prolactinoma: Medical and Surgical Considerations. *Otolaryngol Clin North Am* 2022; Epub ahead of print. PMID: 35256169. Full Text

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Prolactinomas are the most common secretory tumor of the pituitary gland. Clinical symptoms may be due to prolactin oversecretion, localized mass effect, or a combination of both. Although the mainstay of prolactinoma management is medical therapy with dopamine agonists, endoscopic endonasal or transcranial surgery, radiation therapy, or a combination of these is an important treatment option in select cases. This article discusses prolactinoma phenotypes, clinical presentations, and clinically pertinent medical and surgical considerations when managing these tumors.

Pathology and Laboratory Medicine

Aquino VM, **Rock JP**, **Perry KD**, and **Barbetta BT**. Functional reconstruction of the glenoid fossa utilizing a pedicled temporal osteomuscular flap. *Oral Maxillofac Surg Cases* 2022; 8(1). PMID: Not assigned. Full Text

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Current techniques in management of end stage pathology of the temporomandibular joint (TMJ) include the use of alloplastic joint reconstruction. A polyethylene glenoid fossa prosthesis is a necessity of this treatment as it provides a stable platform for function of the metal alloy condylar head. Additionally, the fossa prosthesis limits superior and posterior movement of the reconstructed joint which prevents complications such as migration of the condylar prosthesis into the middle cranial fossa and ear, ankylosis, and pain. When a pathologic process affects the glenoid fossa alone, alloplastic joint reconstruction becomes a less desirable treatment option. Lack of osseous structure along the temporal bone and zygomatic arch can impact the surgeon's ability to fixate a glenoid fossa prosthesis. Additionally, resection of an uninvolved condylar head in situations where there is no advanced pathology would provide a functional solution, but may be overly aggressive and potentially unnecessary. The following is our experience with utilizing a pedicled temporal osteomuscular flap to reconstruct an acquired defect of the glenoid fossa in a 42-year-old male with a diffuse-type tenosynovial giant cell tumor. In this case the mandibular condyle was not affected by the pathology.

Pathology and Laboratory Medicine

Boothby-Shoemaker W, **Kwa M**, **Kohen L**, **Shaw B**, and **Friedman BJ**. A Rare Case of Primary Cutaneous Signet-Ring Cell Melanoma With Discrepant Findings on Gene Expression Profiling and Chromosomal Microarray Analysis. *Am J Dermatopathol* 2022; Epub ahead of print. PMID: 35316818. Full Text

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Melanoma with signet ring cell features is an exceptionally rare variant of primary cutaneous and metastatic melanoma. The molecular mechanisms underlying this unusual cytologic phenotype in malignant melanocytes are largely unknown. In this report, we aim to add to the literature by describing the histomorphological, immunophenotypic, gene expression, and cytogenetic findings in 1 recently encountered case.

Pathology and Laboratory Medicine

Rybicki BA, **Sadasivan SM**, **Chen Y**, **Loveless I**, **Gupta NS**, **Chitale DA**, Williamson SR, Rundle AG, and Tang DL. Race Differences in Telomere length in benign prostate biopsies and subsequent risk of prostate cancer. *Cancer Epidemiol Biomarkers Prev* 2022; Epub ahead of print. PMID: 35247880. Full Text

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BACKGROUND: Telomere shortening is linked to aging and may be associated with increased risk for cancer. Most cancer studies have used telomere length in leukocytes rather than in the target tissue of cancer origin. METHODS: A case-control study of 524 case-control pairs with a benign prostate biopsy nested within a historical cohort of 10,478 men was conducted to determine whether pre-malignant prostate telomere length (assessed using a modified quantitative real-time PCR) is associated with prostate cancer risk. RESULTS: Telomere lengths in benign prostate biopsies of cases vs. controls were similar (1.46 {plus minus} 0.38 vs. 1.45 {plus minus} 0.42; p=0.49). African American (AA) men had significantly shorter telomeres compared with white men (1.51 {plus minus} 0.38 vs. 1.63 {plus minus} 0.39; p<0.0001). In race-stratified analyses, increasing telomere length was more strongly associated with prostate cancer risk in white men, wherein those with telomere length in the highest quartile had 1.9-fold greater adjusted risk of prostate cancer compared to men with prostate telomere lengths in the lowest quartile (OR=1.90; 95% CI = 1.08 - 3.36). Men in the highest telomere length quartile also had a greater risk of aggressive prostate cancer compared with men with telomere lengths in the lowest quartile (OR=2.78; 95% CI =1.25 - 6.19). CONCLUSION: White men have longer telomeres in benign prostate tissue compared with AA men, and those with the longest telomeres may be at increased risk for prostate cancer, particularly the more aggressive form of the disease. IMPACT: Race-specific telomere length measures may be an early biomarker of aggressive prostate cancer.

Pathology and Laboratory Medicine

Sangoi AR, Maclean F, Mohanty S, Hes O, Daniel R, Lal P, Canete-Portillo S, Magi-Galluzzi C, Cornejo KM, Collins K, Hwang M, Falzarano SM, Feely MM, Dababneh M, Harik L, Tretiakova M, Akgul M, Manucha V, Chan E, Kao CS, Siadat F, **Arora K**, Barkan G, Cheng L, Hirsch M, Lei L, Wasco M, Williamson SR, and Acosta AM. Granulomas associated with renal neoplasms: A multi-institutional clinicopathological study of 111 cases. *Histopathology* 2022; Epub ahead of print. PMID: 35347739. Full Text

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AIMS: Formal depiction of granulomatous inflammation associated with renal neoplasms has mainly consisted of case reports. Herein, we investigate the clinicopathological features and potential significance of granulomas associated with renal tumours from a large multi-institutional cohort. METHODS AND RESULTS: One hundred and eleven study cases were collected from 22 institutions, including 57 partial nephrectomies and 54 radical nephrectomies. Patient ages ranged from 27 to 85 years (average = 60.1 years; male = 61%). Renal neoplasms included clear cell renal cell carcinoma (RCC; 86%), papillary RCC (8%), chromophobe RCC (3%), clear cell papillary RCC (1%), mixed epithelial stromal tumour (1%) and oncocytoma (1%). Granulomas were peritumoral in 36%, intratumoral in 24% and both in 40% of cases. Total granuloma count per case ranged from one to 300 (median = 15) with sizes ranging from 0.15 to 15 mm (mean = 1.9 mm). Necrotising granulomas were seen in 14% of cases. Histochemical stains for organisms were performed on 45% of cases (all negative). Sixteen cases (14%) had a prior biopsy/procedure performed, and eight patients had neoadjuvant immunotherapy or chemotherapy. Eleven patients (10%) had a confirmed diagnosis of sarcoidosis, including five in whom sarcoidosis was diagnosed after nephrectomy. CONCLUSION: Based on this largest case-series to date, peri-/intratumoral granulomas associated with renal neoplasms may be more common than initially perceived. The extent of granulomatous inflammation can vary widely and may or may not have necrosis with possible aetiologies, including prior procedure or immunotherapy/chemotherapy. Although a clinical association with sarcoidosis is infrequent it can still occur, and the presence of granulomas warrants mention in pathology reports.

Pathology and Laboratory Medicine

Udumula MP, **Poisson LM**, **Dutta I**, **Tiwari N**, Kim S, **Chinna-Shankar J**, **Allo G**, Sakr S, **Hijaz M**, **Munkarah AR**, **Giri S**, and **Rattan R**. Divergent Metabolic Effects of Metformin Merge to Enhance Eicosapentaenoic Acid Metabolism and Inhibit Ovarian Cancer In Vivo. *Cancers (Basel)* 2022; 14(6). PMID: 35326656. Full Text

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Metformin is being actively repurposed for the treatment of gynecologic malignancies including ovarian cancer. We investigated if metformin induces analogous metabolic changes across ovarian cancer cells. Functional metabolic analysis showed metformin caused an immediate and sustained decrease in oxygen consumption while increasing glycolysis across A2780, C200, and SKOV3ip cell lines. Untargeted metabolomics showed metformin to have differential effects on glycolysis and TCA cycle metabolites, while consistent increased fatty acid oxidation intermediates were observed across the three cell lines. Metabolite set enrichment analysis showed alpha-linolenic/linoleic acid metabolism as being most upregulated. Downstream mediators of the alpha-linolenic/linoleic acid metabolism, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), were abundant in all three cell lines. EPA was more effective in inhibiting SKOV3 and CaOV3 xenografts, which correlated with inhibition of inflammatory markers and indicated a role for EPA-derived specialized pro-resolving mediators such as Resolvin E1. Thus, modulation of the metabolism of omega-3 fatty acids and their anti-inflammatory signaling molecules appears to be one of the common mechanisms of metformin's antitumor activity. The distinct metabolic signature of the tumors may indicate metformin response and aid the preclinical and clinical interpretation of metformin therapy in ovarian and other cancers.

Pathology and Laboratory Medicine

Zarbo RJ. The Unsafe Archaic Processes of Tissue Pathology. *Am J Clin Pathol* 2022; Epub ahead of print. PMID: 35229867. Full Text

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Pediatrics

Blackwell CK, Mansolf M, Sherlock P, Ganiban J, Hofheimer JA, **Barone CJ**, Bekelman TA, Blair C, Cella D, Collazo S, Croen LA, Deoni S, Elliott AJ, Ferrara A, Fry RC, Gershon R, Herbstman JB, Karagas MR, LeWinn KZ, Margolis A, Miller RL, O'Shea TM, Porucznik CA, and Wright RJ. Youth Well-being During the COVID-19 Pandemic. *Pediatrics* 2022; Epub ahead of print. PMID: 35301542. Full Text

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Rhode Island Hospital, Brown University, Providence, Rhode Island.
Avera Research Institute & Department of Pediatrics, University of South Dakota School of Medicine, Sioux Falls, South Dakota.
Columbia University, New York, New York.
Geisel School of Medicine, Dartmouth College, Hanover, New Hampshire.
University of California, San Francisco, California.
University of Utah, Salt Lake City, Utah.

This study evaluates the impact of COVID-19 pandemic-related family hardships on youth's psychological well-being and identifies malleable factors to promote and protect against such outcomes.

Pharmacy

Zasowski EJ, Trinh TD, Claeys KC, Lagnf AM, Bhatia S, Klinker KP, Veve MP, Estrada SJ, Johns ST, Sawyer AJ, Huang V, LaFrance B, Levine DP, Kaye KS, **Davis SL**, and Rybak MJ. Multicenter Cohort Study of Ceftaroline Versus Daptomycin for Treatment of Methicillin-Resistant Staphylococcus aureus Bloodstream Infection. *Open Forum Infect Dis* 2022; 9(3):ofab606. PMID: 35146040. Full Text

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BACKGROUND: Observational data suggest ceftaroline may be effective for methicillin-resistant Staphylococcus aureus (MRSA) bloodstream infection (BSI), but comparative data with standard of care are limited. This analysis compares the outcomes of MRSA BSI treated with ceftaroline or daptomycin. METHODS: Multicenter, retrospective, observational cohort study of adult patients with MRSA BSI from 2010 to 2017. Patients treated with ≥72 hours of ceftaroline or daptomycin were included. Those clearing BSI before study drug and those with a pneumonia source were excluded. The primary outcome was composite treatment failure, defined as 30-day mortality, BSI duration ≥7 days on study drug, and 60-day MRSA BSI recurrence. Inverse probability of treatment weighted risk difference in composite failure between daptomycin and ceftaroline groups was computed and 15% noninferiority margin applied. RESULTS: Two hundred seventy patients were included; 83 ceftaroline and 187 daptomycin. Ceftaroline was noninferior to daptomycin with respect to composite failure (39% daptomycin, 32.5% ceftaroline; weighted risk difference, 7.0% [95% confidence interval, -5.0% to 19.0%]). No differences between treatment groups was observed for 30-day mortality or other secondary efficacy outcomes. Creatine phosphokinase elevation was significantly more common among daptomycin patients (5.3% vs 0%, P = .034). Rash was significantly more common among ceftaroline patients (10.8 vs 1.1%, P = .001). CONCLUSIONS: No difference in treatment failure or mortality was observed between MRSA BSI treated with ceftaroline or daptomycin. These data support future study of ceftaroline as a primary MRSA BSI treatment and current use of ceftaroline when an alternative to vancomycin and daptomycin is required.

Public Health Sciences

Abu Rous F, **Gutta R**, **Li P**, Halmos B, and **Gadgeel S**. Pembrolizumab in Combination with Chemotherapy in Patients with ERBB2-Mutated Non-Small Cell Lung Cancer. *Target Oncol* 2022; Epub ahead of print. PMID: 35312940. Full Text

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BACKGROUND: Human epidermal growth factor receptor 2 (ERBB2) mutation is a known oncogenic driver mutation in a small proportion of non-small cell lung cancers (NSCLCs). Many targeted therapies are being developed and investigated for the treatment of ERBB2-mutated NSCLC, however none of these agents have yet been approved as a front-line treatment. Thus, platinum-based chemotherapy with or without immunotherapy remains the preferred first-line therapy for ERBB2-mutated NSCLC. OBJECTIVE: We aimed to study the activity of chemotherapy in combination with pembrolizumab as first-line treatment in patients with stage IV ERBB2-mutated NSCLC. PATIENTS AND METHODS: We retrospectively identified five patients with ERBB2-mutated NSCLC treated with carboplatin, pemetrexed and pembrolizumab as first-line therapy between 2018 and 2020. Overall survival (OS), progression-free survival (PFS), and time to next therapy (TTNT) were summarized by Kaplan-Meier methodology using R 4.0.5 with median time to event. Response rates defined by partial response (PR) or PR + stable disease (SD) and 95% Clopper-Pearson confidence interval (CI) were calculated. RESULTS: The median age of these five patients was 60 years and all five patients' tumors had ERBB2 mutations-4 had exon 20 mutation and 1 had exon 23 mutation. With a median follow-up of 32 months, the median OS was 24 months, the median PFS was 9 months, and the median TTNT was 9 months. The response rate was 0.6 for PR (Clopper-Pearson exact 95% CI 0.147-0.947) and 0.8 for PR and SD (Clopper-Pearson exact 95% CI 0.284-0.995). No unexpected toxicities were observed. CONCLUSION: In a small number of patients, chemotherapy and pembrolizumab as first-line therapy in ERBB2-mutated NSCLC patients demonstrated activity similar to previous reports with this regimen. Future clinical trials are needed to determine the role of chemotherapy and immunotherapy for this patient population in the context of emerging targeted agents.

Public Health Sciences

Diaczok B, Nair G, **Lin CH**, Paxton JH, Abbas A, **Barkley G**, **O'Neil B**, **O'Neil W**, Patel K, Sims M, **Poisson L**, and Sule AA. Evolution of prescribing practices and outcomes in the COVID-19 pandemic in metropolitan areas. *Infez Med* 2022; 30(1):86-95. PMID: 35350268. Full Text

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INTRODUCTION: We wanted to characterize the evolution of the COVID-19 pandemic in a typical metropolitan area. METHODS: Data were extracted from the Detroit COVID-19 Consortium database for hospitalized COVID-19 patients treated in Southeast Michigan over the 12-month period from March 2020 to February 2021. Demographic and outcomes data were compared to CDC data. RESULTS: A total of 4,775 patients were enrolled during the study period. We divided the pandemic into three phases: Phase-1 (Spring Surge); Phase-2 (Summer Lull); and Phase-3 (Fall Spike). Changes in hydroxychloroquine, remdesivir, corticosteroid, antibiotic and anticoagulant use closely followed publication of landmark studies. Mortality in critically-ill patients decreased significantly from Phase-1 to Phase-3 (60.3% vs. 47.9%, Chisq p=0.0110). Monthly mortality of all hospitalized patients ranged between 14.8% - 21.5%

during Phase-1 and 9.7 to 13.4% during Phase 3 (NS). DISCUSSION: The COVID-19 pandemic presented in three unique phases in Southeast Michigan. Medical systems rapidly modified treatment plans, often preceding CDC and NIH recommendations. Despite improved treatment regimens, intubation rates and mortality for hospitalized patients remained elevated. CONCLUSION: Preventive measures aimed at reducing hospitalizations for COVID-19 should be emphasized.

Public Health Sciences

Gander JC, Maiyani M, White LL, Sterrett AT, Güney B, Pawloski PA, DeFor T, Olsen Y, **Rybicki BA**, **Neslund-Dudas C**, **Sheth D**, **Krajenta R**, **Purushothaman D**, Honda S, Yonehara C, Goddard KAB, Prado YK, Ahsan H, Kibriya MG, Aschebrook-Kilfoy B, Chan CH, Hague S, Clarke CL, Thompson B, Sawyer J, Gaudet MM, and Feigelson HS. Developing an algorithm across integrated healthcare systems to identify a history of cancer using electronic medical records. *J Am Med Inform Assoc* 2022; Epub ahead of print. PMID: 35348718. Full Text

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OBJECTIVE: Tumor registries in integrated healthcare systems (IHCS) have high precision for identifying incident cancer but often miss recently diagnosed cancers or those diagnosed outside of the IHCS. We developed an algorithm using the electronic medical record (EMR) to identify people with a history of cancer not captured in the tumor registry to identify adults, aged 40-65 years, with no history of cancer. MATERIALS AND METHODS: The algorithm was developed at Kaiser Permanente Colorado, and then applied to 7 other IHCS. We included tumor registry data, diagnosis and procedure codes, chemotherapy files, oncology encounters, and revenue data to develop the algorithm. Each IHCS adapted the algorithm to their EMR data and calculated sensitivity and specificity to evaluate the algorithm's performance after iterative chart review. RESULTS: We included data from over 1.26 million eligible people across 8 IHCS; 55 601 (4.4%) were in a tumor registry, and 44848 (3.5%) had a reported cancer not captured in a registry. The common attributes of the final algorithm at each site were diagnosis and procedure codes. The sensitivity of the algorithm at each IHCS was 90.65%-100%, and the specificity was 87.91%-100%. DISCUSSION: Relying only on tumor registry data would miss nearly half of the identified cancers. Our algorithm was robust and required only minor modifications to adapt to other EMR systems. CONCLUSION: This algorithm can identify cancer cases regardless of when the diagnosis occurred and may be useful for a variety of research applications or quality improvement projects around cancer care.

Public Health Sciences

Jayaprakash N, **Pflaum-Carlson J**, **Gardner-Gray J**, **Hurst G**, **Kinni H**, **Tang A**, **Coba V**, and **Rivers EP**. Accelerated Critical Therapy Now in the Emergency Department Using an Early Intervention Team: The Impact of Early Critical Care Consultation for ICU Boarders. *Crit Care Explor* 2022; 4(3):e0660. PMID: 35317241. Full Text

Department of Emergency Medicine, Henry Ford Hospital, Detroit, MI.
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Evaluate the impact of an emergency department (ED)-based critical care consultation service, hypothesizing early consultation results in shorter hospital length of stay (LOS). DESIGN: Retrospective observational study from February 2018 to 2020. SETTING: An urban academic quaternary referral center. PATIENTS: Adult patients greater than or equal to 18 years admitted to the ICU from the ED. Exclusion criteria included age less than 18 years, do not resuscitate/do not intubate documented prior to arrival, advanced directives outlining limitations of care, and inability to calculate baseline modified Sequential Organ Failure Assessment (mSOFA) score. INTERVENTIONS: ED-based critical care consultation by an early intervention team (EIT) initiated by the primary emergency medicine physician compared with usual practice. MEASUREMENTS: The primary outcome was hospital LOS, and secondary outcomes were hospital mortality, ICU LOS, ventilator-free days, and change in the mSOFA. MAIN RESULTS: A total 1,764 patients met inclusion criteria, of which 492 (27.9%) were evaluated by EIT. Final analysis, excluding those without baseline mSOFA score, limited to 1,699 patients, 476 in EIT consultation group, and 1,223 in usual care group. Baseline mSOFA scores (±sd) were higher in the EIT consultation group at 3.6 (±2.4) versus 2.6 (±2.0) in the usual care group. After propensity score matching, there was no difference in the primary outcome: EIT consultation group had a median (interquartile range [IQR]) LOS of 7.0 days (4.0-13.0 d) compared with the usual care group median (IQR) LOS of 7.0 days (4.0-13.0 d), $p = 0.64$. The median (IQR) boarding time was twice as long subjects in the EIT consultation group at 8.0 (5.0-15.0) compared with 4.0 (3.0-7.0) usual care, $p < 0.001$. CONCLUSIONS: An ED-based critical care consultation model did not impact hospital LOS. This model was used in the ED and the EIT cared for critically ill patients with higher severity of illness and longer ED boarding times.

Public Health Sciences

Korycinski S, **Metcalf D**, and **Keteyian C**. Effectiveness of a telephone-based nursing intervention to reduce hospital utilization by COVID-19 patients. *Public Health Nurs* 2022; Epub ahead of print. PMID: 35334128. Full Text

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OBJECTIVE: Determine the effectiveness of a COVID-19 remote monitoring and management program in reducing preventable hospital utilization. DESIGN: A retrospective cohort study utilizing data from electronic health records. SAMPLE: Two hundred and ninety-third patients who tested positive for COVID-19 at a drive-through testing site in Michigan. The intervention group, consisting of 139 patients, was compared to a control group of 154 patients. MEASUREMENTS: The primary outcome was the 30-day probability of hospital utilization. The covariates included in the analysis were age, gender, tobacco use, body mass index (BMI), race, and ethnicity. INTERVENTION: A nurse-led, telephone-based active management protocol for COVID-19 patients who were isolating at home. RESULTS: The intervention group had a non-statistically significant 42% reduction in risk of hospital utilization within 30 days of a positive COVID-19 test when compared to the control group (HR = 0.578, p-value .111, HR 95% CI [0.29, 1.13]). CONCLUSIONS: A nurse-led remote monitoring and management program for COVID-19 reduced the probability of 30-day hospital utilization. Although the findings were not statistically significant, the program yielded practical significance by reducing hospital utilization, in-person interaction, and the risk of infection for healthcare workers.

Public Health Sciences

Rybicki BA, **Sadasivan SM**, **Chen Y**, **Loveless I**, **Gupta NS**, **Chitale DA**, Williamson SR, Rundle AG, and Tang DL. Race Differences in Telomere length in benign prostate biopsies and subsequent risk of prostate cancer. *Cancer Epidemiol Biomarkers Prev* 2022; Epub ahead of print. PMID: 35247880. Full Text

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BACKGROUND: Telomere shortening is linked to aging and may be associated with increased risk for cancer. Most cancer studies have used telomere length in leukocytes rather than in the target tissue of cancer origin. METHODS: A case-control study of 524 case-control pairs with a benign prostate biopsy nested within a historical cohort of 10,478 men was conducted to determine whether pre-malignant prostate telomere length (assessed using a modified quantitative real-time PCR) is associated with prostate cancer risk. RESULTS: Telomere lengths in benign prostate biopsies of cases vs. controls were similar (1.46 {plus minus} 0.38 vs. 1.45 {plus minus} 0.42; p=0.49). African American (AA) men had significantly shorter telomeres compared with white men (1.51 {plus minus} 0.38 vs. 1.63 {plus minus} 0.39; p<0.0001). In race-stratified analyses, increasing telomere length was more strongly associated with prostate cancer risk in white men, wherein those with telomere length in the highest quartile had 1.9-fold greater adjusted risk of prostate cancer compared to men with prostate telomere lengths in the lowest quartile (OR=1.90; 95% CI = 1.08 - 3.36). Men in the highest telomere length quartile also had a greater risk of aggressive prostate cancer compared with men with telomere lengths in the lowest quartile (OR=2.78; 95% CI =1.25 - 6.19). CONCLUSION: White men have longer telomeres in benign prostate tissue compared with AA men, and those with the longest telomeres may be at increased risk for prostate cancer, particularly the more aggressive form of the disease. IMPACT: Race-specific telomere length measures may be an early biomarker of aggressive prostate cancer.

Public Health Sciences

Scher K, **Sohaki A**, **Tang A**, **Plum A**, **Taylor M**, and **Joseph C**. A community partnership to evaluate the feasibility of addressing food insecurity among adult patients in an urban healthcare system. *Pilot Feasibility Stud* 2022; 8(1):59. PMID: 35264239. Full Text

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BACKGROUND: Food insecurity (FI) is a significant public health problem. Possible sequelae of prolonged food insecurity include kidney disease, obesity, and diabetes. Our objective was to assess the feasibility of a partnership between Henry Ford Health System (HFHS) and Gleaners Community Foodbank of Southeastern Michigan to implement and evaluate a food supplementation intervention initiated in a hospital outpatient clinic setting. METHODS: We established a protocol for using the Hunger Vital Signs to screen HFHS internal medicine patients for food insecurity and established the data sharing infrastructure and agreements necessary for an HFHS-Gleaners partnership that would allow home delivery of food to consenting patients. We evaluated the food supplementation program using a quasi-experimental design and constructing a historical comparison group using the electronic medical record. Patients identified as food insecure through screening were enrolled in the program and received food supplementation twice per month for a total of 12 months, mostly by home delivery. The feasibility outcomes included successful clinic-based screening and enrollment and successful food delivery to consenting patients. Our evaluation compared healthcare utilization between the intervention and historical comparison group during a 12-month observation period using a difference-in-differences (DID) analysis. RESULTS: Of 1691 patients screened, 353 patients (20.9%) met the criteria for FI, of which 340/353 (96.3%) consented, and 256/340 (75.3%) were matched and had data sufficient for analysis. Food deliveries were successfully made to 89.9% of participant households. At follow-up, the intervention group showed greater reductions in emergency department visits than the comparison group, -41.5% and -25.3% reduction, respectively. Similar results were observed for hospitalizations, -55.9% and -17.6%

reduction for intervention and control groups, respectively. DID regression analysis also showed lower trends in ED visits and hospitalizations for the intervention group compared to the comparison group. CONCLUSIONS: Results suggest that community-health system partnerships to address patient-reported food insecurity are feasible and potentially could reduce healthcare utilization in these patients. A larger, randomized trial may be the next step in fully evaluating this intervention, perhaps with more outcomes (e.g., medication adherence), and additional covariates (e.g., housing insecurity and financial strain).

Public Health Sciences

Udumula MP, **Poisson LM**, **Dutta I**, **Tiwari N**, Kim S, **Chinna-Shankar J**, **Allo G**, Sakr S, **Hijaz M**, **Munkarah AR**, **Giri S**, and **Rattan R**. Divergent Metabolic Effects of Metformin Merge to Enhance Eicosapentaenoic Acid Metabolism and Inhibit Ovarian Cancer In Vivo. *Cancers (Basel)* 2022; 14(6). PMID: 35326656. Full Text

Department of Women's Health Services, Henry Ford Hospital, Henry Ford Cancer Institute, Detroit, MI 48202, USA.
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Metformin is being actively repurposed for the treatment of gynecologic malignancies including ovarian cancer. We investigated if metformin induces analogous metabolic changes across ovarian cancer cells. Functional metabolic analysis showed metformin caused an immediate and sustained decrease in oxygen consumption while increasing glycolysis across A2780, C200, and SKOV3ip cell lines. Untargeted metabolomics showed metformin to have differential effects on glycolysis and TCA cycle metabolites, while consistent increased fatty acid oxidation intermediates were observed across the three cell lines. Metabolite set enrichment analysis showed alpha-linolenic/linoleic acid metabolism as being most upregulated. Downstream mediators of the alpha-linolenic/linoleic acid metabolism, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), were abundant in all three cell lines. EPA was more effective in inhibiting SKOV3 and CaOV3 xenografts, which correlated with inhibition of inflammatory markers and indicated a role for EPA-derived specialized pro-resolving mediators such as Resolvin E1. Thus, modulation of the metabolism of omega-3 fatty acids and their anti-inflammatory signaling molecules appears to be one of the common mechanisms of metformin's antitumor activity. The distinct metabolic signature of the tumors may indicate metformin response and aid the preclinical and clinical interpretation of metformin therapy in ovarian and other cancers.

Pulmonary and Critical Care Medicine

Beran A, Srour O, Malhas SE, Mhanna M, Ayesh H, Sajdeya O, Musallam R, Khokher W, Kalifa M, **Srour K**, and Assaly R. High-Flow Nasal Cannula Oxygen versus Non-Invasive Ventilation in Subjects with COVID-19: A Systematic Review and Meta-analysis of Comparative Studies. *Respir Care* 2022; Epub ahead of print. PMID: 35318240. Full Text

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Introduction: High-flow nasal cannula oxygen (HFNC) and non-invasive ventilation (NIV) have been widely used in patients with acute hypoxic respiratory failure (AHRF) due to coronavirus disease 2019 (COVID-19). However, the impact of HFNC vs. NIV on clinical outcomes of COVID-19 is uncertain.

Therefore, we performed this meta-analysis to evaluate the effect of HFNC vs. NIV in COVID-19-related AHRF.Methods: Several electronic databases were searched through February 10, 2022, for eligible studies comparing between HFNC and NIV in COVID-19-related AHRF. Our primary outcome was intubation. The secondary outcomes were mortality, length of hospital stay (LOS), and PaO2/FiO2 ratio changes. Pooled risk ratio (RR) and mean difference (MD) with the corresponding 95% confidence intervals (CIs) were obtained using a random-effect model. Prediction intervals (PI) were calculated to indicate the variance in outcomes that would be expected if new studies were conducted in the future.Results: Nineteen studies involving 3606 subjects (1880 received HFNC and 1726 received NIV) were included. There were no differences in intubation (RR 1.01, 95% CI 0.85-1.20, P=0.89) or LOS (MD 0.38 days, 95% CI -0.61, 1.37, P=0.45) between groups with consistent results on the subgroup of RCTs. Mortality was lower in NIV (RR 0.81, 95% CI 0.66-0.98, P=0.03). However, PI was 0.41-1.59, and subgroup analysis of RCTs showed no difference in mortality between groups. There was a greater improvement in PaO2/FiO2 ratio with NIV (MD 22.80, 95% CI 5.30-40.31, P=0.01).Conclusions: Our study showed that despite the greater improvement in PaO2/FiO2 ratio with NIV, the intubation and length of hospital stay were similar between HFNC and NIV. Although mortality was lower with HFNC than NIV, the prediction interval included the null value, and there was no difference in mortality between HFNC and NIV on a subgroup of RCTs. Future large-scale RCTs are necessary to prove our findings.

Pulmonary and Critical Care Medicine

Jayaprakash N, **Pflaum-Carlson J**, **Gardner-Gray J**, **Hurst G**, **Kinni H**, **Tang A**, **Coba V**, and **Rivers EP**. Accelerated Critical Therapy Now in the Emergency Department Using an Early Intervention Team: The Impact of Early Critical Care Consultation for ICU Boarders. *Crit Care Explor* 2022; 4(3):e0660. PMID: 35317241. Full Text

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Evaluate the impact of an emergency department (ED)-based critical care consultation service, hypothesizing early consultation results in shorter hospital length of stay (LOS). DESIGN: Retrospective observational study from February 2018 to 2020. SETTING: An urban academic quaternary referral center. PATIENTS: Adult patients greater than or equal to 18 years admitted to the ICU from the ED. Exclusion criteria included age less than 18 years, do not resuscitate/do not intubate documented prior to arrival, advanced directives outlining limitations of care, and inability to calculate baseline modified Sequential Organ Failure Assessment (mSOFA) score. INTERVENTIONS: ED-based critical care consultation by an early intervention team (EIT) initiated by the primary emergency medicine physician compared with usual practice. MEASUREMENTS: The primary outcome was hospital LOS, and secondary outcomes were hospital mortality, ICU LOS, ventilator-free days, and change in the mSOFA. MAIN RESULTS: A total 1,764 patients met inclusion criteria, of which 492 (27.9%) were evaluated by EIT. Final analysis, excluding those without baseline mSOFA score, limited to 1,699 patients, 476 in EIT consultation group, and 1,223 in usual care group. Baseline mSOFA scores (±sd) were higher in the EIT consultation group at 3.6 (±2.4) versus 2.6 (±2.0) in the usual care group. After propensity score matching, there was no difference in the primary outcome: EIT consultation group had a median (interquartile range [IQR]) LOS of 7.0 days (4.0-13.0 d) compared with the usual care group median (IQR) LOS of 7.0 days (4.0-13.0 d), p = 0.64. The median (IQR) boarding time was twice as long subjects in the EIT consultation group at 8.0 (5.0-15.0) compared with 4.0 (3.0-7.0) usual care, p < 0.001. CONCLUSIONS: An ED-based critical care consultation model did not impact hospital LOS. This model was used in the ED and the EIT cared for critically ill patients with higher severity of illness and longer ED boarding times.

Pulmonary and Critical Care Medicine

Savale L, Huitema M, Shlobin O, Kouranos V, Nathan SD, Nunes H, Gupta R, Grutters JC, Culver DA, Post MC, **Ouellette D**, Lower EE, Al-Hakim T, Wells AU, Humbert M, and Baughman RP. WASOG

statement on the diagnosis and management of sarcoidosis-associated pulmonary hypertension. *Eur Respir Rev* 2022; 31(163). PMID: 35140103. Full Text

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Sarcoidosis-associated pulmonary hypertension (SAPH) is an important complication of advanced sarcoidosis. Over the past few years, there have been several studies dealing with screening, diagnosis and treatment of SAPH. This includes the results of two large SAPH-specific registries. A task force was established by the World Association of Sarcoidosis and Other Granulomatous disease (WASOG) to summarise the current level of knowledge in the area and provide guidance for the management of patients. A group of sarcoidosis and pulmonary hypertension experts participated in this task force. The committee developed a consensus regarding initial screening including who should undergo more specific testing with echocardiogram. Based on the results, the committee agreed upon who should undergo right-heart catheterisation and how to interpret the results. The committee felt there was no specific phenotype of a SAPH patient in whom pulmonary hypertension-specific therapy could be definitively recommended. They recommended that treatment decisions be made jointly with a sarcoidosis and pulmonary hypertension expert. The committee recognised that there were significant defects in the current knowledge regarding SAPH, but felt the statement would be useful in directing future studies.

Radiation Oncology

Siddiqui F. Young Patient, Old Evidence. *Int J Radiat Oncol Biol Phys* 2022; 112(4):850-851. PMID: 35190054. Full Text

Head and Neck Radiation Oncology. Henry Ford Cancer Institute, Radiation Oncology, Detroit, Michigan.

Research Administration

Sotoudeh-Paima S, Jodeiri A, Hajizadeh F, and **Soltanian-Zadeh H**. Multi-scale convolutional neural network for automated AMD classification using retinal OCT images. *Comput Biol Med* 2022; 144:105368. PMID: 35259614. Full Text

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BACKGROUND AND OBJECTIVE: Age-related macular degeneration (AMD) is the most common cause of blindness in developed countries, especially in people over 60 years of age. The workload of specialists and the healthcare system in this field has increased in recent years mainly due to three reasons: 1) increased use of retinal optical coherence tomography (OCT) imaging technique, 2) prevalence of population aging worldwide, and 3) chronic nature of AMD. Recent advancements in the field of deep learning have provided a unique opportunity for the development of fully automated diagnosis frameworks. Considering the presence of AMD-related retinal pathologies in varying sizes in OCT images, our objective was to propose a multi-scale convolutional neural network (CNN) that can capture inter-scale variations and improve performance using a feature fusion strategy across convolutional blocks. METHODS: Our proposed method introduces a multi-scale CNN based on the feature pyramid network (FPN) structure. This method is used for the reliable diagnosis of normal and two common clinical characteristics of dry and wet AMD, namely drusen and choroidal neovascularization (CNV). The proposed method is evaluated on the national dataset gathered at Hospital (NEH) for this study, consisting of 12649 retinal OCT images from 441 patients, and the UCSD public dataset, consisting of 108312 OCT images from 4686 patients. RESULTS: Experimental results show the superior performance of our proposed multi-scale structure over several well-known OCT classification frameworks. This feature combination strategy has proved to be effective on all tested backbone models, with improvements ranging from 0.4% to 3.3%. In addition, gradual learning has proved to be effective in improving performance in two consecutive stages. In the first stage, the performance was boosted from 87.2%±2.5% to 92.0%±1.6% using pre-trained ImageNet weights. In the second stage, another performance boost from 92.0%±1.6% to 93.4%±1.4% was observed as a result of fine-tuning the previous model on the UCSD dataset. Lastly, generating heatmaps provided additional proof for the effectiveness of our multi-scale structure, enabling the detection of retinal pathologies appearing in different sizes. CONCLUSION: The promising quantitative results of the proposed architecture, along with qualitative evaluations through generating heatmaps, prove the suitability of the proposed method to be used as a screening tool in healthcare centers assisting ophthalmologists in making better diagnostic decisions.

Sleep Medicine

Cheng P, **Kalmbach DA**, Hsieh HF, **Castelan AC**, **Sagong C**, and **Drake CL**. Improved resilience following digital cognitive behavioral therapy for insomnia protects against insomnia and depression one year later. *Psychol Med* 2022;1-11; Epub ahead of print. PMID: 35257648. Full Text

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BACKGROUND: While the negative consequences of insomnia are well-documented, a strengths-based understanding of how sleep can increase health promotion is still emerging and much-needed. Correlational evidence has connected sleep and insomnia to resilience; however, this relationship has not yet been experimentally tested. This study examined resilience as a mediator of treatment outcomes in a randomized clinical trial with insomnia patients. METHODS: Participants were randomized to either digital cognitive behavioral therapy for insomnia (dCBT-I; n = 358) or sleep education control (n = 300), and assessed at pre-treatment, post-treatment, and 1-year follow-up. A structural equation modeling framework was utilized to test resilience as a mediator of insomnia and depression. Risk for insomnia and depression was also tested in the model, operationalized as a latent factor with sleep reactivity, stress, and rumination as indicators (aligned with the 3-P model). Sensitivity analyses tested the impact of change in resilience on the insomnia relapse and incident depression at 1-year follow-up. RESULTS: dCBT-I resulted in greater improvements in resilience compared to the sleep education control. Furthermore, improved resilience following dCBT-I lowered latent risk, which was further associated with reduced insomnia and depression at 1-year follow-up. Sensitivity analyses indicated that each point

improvement in resilience following treatment reduced the odds of insomnia relapse and incident depression 1 year later by 76% and 65%, respectively. CONCLUSIONS: Improved resilience is likely a contributing mechanism to treatment gains following insomnia therapy, which may then reduce longer-term risk for insomnia relapse and depression.

Sleep Medicine
Moreno JP, Hannay KM, Walch O, Dadabhoy H, Christian J, Puyau M, El-Mubasher A, Bacha F, Grant SR, Park RJ, and **Cheng P**. Estimating Circadian Phase in Elementary School Children: Leveraging Advances in Physiologically-Informed Models of Circadian Entrainment and Wearable Devices. *Sleep* 2022; Epub ahead of print. PMID: 35275213. Full Text

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STUDY OBJECTIVES: Examine the ability of a physiologically based mathematical model of human circadian rhythms to predict circadian phase, as measured by salivary dim light melatonin onset (DLMO), in children compared to other proxy measurements of circadian phase (bedtime, sleep midpoint, and waketime). METHODS: As part of an ongoing clinical trial, a sample of 29 elementary school children (mean age: 7.4 +/- .97 years) completed 7 days of wrist actigraphy before a lab visit to assess DLMO. Hourly salivary melatonin samples were collected under dim light conditions (< 5 lux). Data from actigraphy were used to generate predictions of circadian phase using both a physiologically based circadian limit cycle oscillator mathematical model (Hannay model), and published regression equations that utilize average sleep onset, midpoint, and offset to predict DLMO. Agreement of proxy predictions with measured DLMO were assessed and compared. RESULTS: DLMO predictions using the Hannay model outperformed DLMO predictions based on children's sleep/wake parameters with a Lin's Concordance Correlation Coefficient (LinCCC) of 0.79 compared to 0.41 - 0.59 for sleep/wake parameters. The mean absolute error was 31 minutes for the Hannay model compared to 35 - 38 minutes for the sleep/wake variables. CONCLUSION: Our findings suggest sleep-wake behaviors were weak proxies of DLMO phase in children, but mathematical models using data collected from wearable data can be used to improve the accuracy of those predictions. Additional research is needed to better adapt these adult models for use in children.

Surgery
Abouljoud MS, Simpson DC, and Dick AAS. Diversity in transplantation surgery and the American Society of Transplant Surgeons: Opportunity for a bold vision and positive change. *Am J Surg* 2022; Epub ahead of print. PMID: 35249727. Full Text

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Surgery
Aquino VM, **Rock JP**, **Perry KD**, and **Barbetta BT**. Functional reconstruction of the glenoid fossa utilizing a pedicled temporal osteomuscular flap. *Oral Maxillofac Surg Cases* 2022; 8(1). PMID: Not assigned. Full Text

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Current techniques in management of end stage pathology of the temporomandibular joint (TMJ) include the use of alloplastic joint reconstruction. A polyethylene glenoid fossa prosthesis is a necessity of this treatment as it provides a stable platform for function of the metal alloy condylar head. Additionally, the

fossa prosthesis limits superior and posterior movement of the reconstructed joint which prevents complications such as migration of the condylar prosthesis into the middle cranial fossa and ear, ankylosis, and pain. When a pathologic process affects the glenoid fossa alone, alloplastic joint reconstruction becomes a less desirable treatment option. Lack of osseous structure along the temporal bone and zygomatic arch can impact the surgeon's ability to fixate a glenoid fossa prosthesis. Additionally, resection of an uninvolved condylar head in situations where there is no advanced pathology would provide a functional solution, but may be overly aggressive and potentially unnecessary. The following is our experience with utilizing a pedicled temporal osteomuscular flap to reconstruct an acquired defect of the glenoid fossa in a 42-year-old male with a diffuse-type tenosynovial giant cell tumor. In this case the mandibular condyle was not affected by the pathology.

Surgery

Bicket MC, Gunaseelan V, Lagisetty P, Fernandez AC, Bohnert A, **Assenmacher E**, Sequeira M, Englesbe MJ, Brummett CM, and Waljee JF. Association of opioid exposure before surgery with opioid consumption after surgery. *Reg Anesth Pain Med* 2022; Epub ahead of print. PMID: 35241626. Full Text

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OBJECTIVE: To determine the effect of prescription opioid use in the year before surgery on opioid consumption after surgery. BACKGROUND: Recently developed postoperative opioid prescribing guidelines rely on data from opioid-naïve patients. However, opioid use in the USA is common, and the impact of prior opioid exposure on the consumption of opioids after surgery is unclear. METHODS: Population-based cohort study of 26,001 adults 18 years of age and older who underwent one of nine elective general or gynecologic surgical procedures between January 1, 2017 and October 31, 2019, with prospectively collected patient-reported data from the Michigan Surgical Quality Collaborative (MSQC) linked to state prescription drug monitoring program at 70 MSQC-participating hospitals on 30-day patient-reported opioid consumption in oral morphine equivalents (OME) (primary outcome). RESULTS: Compared with opioid-naïve participants, opioid-exposed participants (26% of sample) consumed more prescription opioids after surgery (adjusted OME difference 12, 95% CI 10 to 14). Greater opioid exposure was associated with higher postoperative consumption in a dose-dependent manner, with chronic users reporting the greatest consumption (additional OMEs 32, 95% CI 21 to 42). However, for eight of nine procedures, 90% of opioid-exposed participants consumed ≤150 OMEs. Among those receiving perioperative prescriptions, opioid-exposed participants had higher likelihood of refill (adjusted OR 4.7, 95% CI 4.4 to 5.1), number of refills (adjusted incidence rate ratio 4.0, 95% CI 3.7 to 4.3), and average refill amount (adjusted OME difference 333, 95% CI 292 to 374)). CONCLUSIONS: Preoperative opioid use is associated with small increases in patient-reported opioid consumption after surgery for most patients, though greater differences exist for patients with chronic use. For most patients with preoperative opioid exposure, existing guidelines may meet their postoperative needs. However, guidelines may need tailoring for patients with chronic use, and providers should anticipate a higher likelihood of postoperative refills for all opioid-exposed patients.

Surgery

Brajcich BC, Stigall K, Walsh DS, Varghese TK, Barber AE, **Kralovich KA**, Wescott AB, Pockaj BA, Ko CY, and Laronga C. Preoperative Nutritional Optimization of the Oncology Patient: A Scoping Review. *J Am Coll Surg* 2022; 234(3):384-394. PMID: 35213503. Request Article

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BACKGROUND: Malnutrition is common among patients with cancer and is a known risk factor for poor postoperative outcomes; however, preoperative nutritional optimization guidelines are lacking in this high-risk population. The objective of this study was to review the evidence regarding preoperative nutritional optimization of patients undergoing general surgical operations for the treatment of cancer. METHODS: A literature search was performed across the Ovid (MEDLINE), Cochrane Library (Wiley), Embase (Elsevier), CINAHL (EBSCOhost), and Web of Science (Clarivate) databases. Eligible studies included randomized clinical trials, observational studies, reviews, and meta-analyses published between 2010 and 2020. Included studies evaluated clinical outcomes after preoperative nutritional interventions among adult patients undergoing surgery for gastrointestinal cancer. Data extraction was performed using a template developed and tested by the study team. RESULTS: A total of 5,505 publications were identified, of which 69 studies were included for data synthesis after screening and full text review. These studies evaluated preoperative nutritional counseling, protein-calorie supplementation, immunonutrition supplementation, and probiotic or symbiotic supplementation. CONCLUSIONS: Preoperative nutritional counseling and immunonutrition supplementation should be considered for patients undergoing surgical treatment of gastrointestinal malignancy. For malnourished patients, protein-calorie supplementation should be considered, and for patients undergoing colorectal cancer surgery, probiotics or symbiotic supplementation should be considered.

Surgery
Choi WJ, Williams PJ, Claasen MP, **Ivanics T**, Englesakis M, Gallinger S, Hansen B, and Sapisochin G. ASO Visual Abstract: Systematic Review and Meta-analysis of Prognostic Factors for Early Recurrence in Intrahepatic Cholangiocarcinoma After Curative-Intent Resection. *Ann Surg Oncol* 2022; Epub ahead of print. PMID: 35298761. Full Text

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Surgery

Docimo S, Jr., Seeras K, **Acho R**, Pryor A, and Spaniolas K. Academic and community hernia center websites in the United States fail to meet healthcare literacy standards of readability. *Hernia* 2022; Epub ahead of print. PMID: 35344107. Full Text

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BACKGROUND: Health literacy is considered the single best predictor of health status. Organizations including the American Medical Association (AMA) and the National Institutes of Health (NIH) have recommended that the readability of patient education materials not exceed the sixth-grade level. Our study focuses on the readability of self-designated hernia centers websites at both academic and community organizations across the United States to determine their ability to dispense patient information at an appropriate reading level. METHODS: A search was conducted utilizing the Google search engine. The key words "Hernia Center" and "University Hernia Center" were used to identify links to surgical programs within the United States. The following readability tests were conducted via the program: Flesch-Kincaid Grade Level (FKGL), Gunning Fox Index (GFI), Coleman-Liau Index (CLI), Simple Measure of Gobbledygook (SMOG), and Flesch Reading Ease (FRE) score. RESULTS: Of 96 websites, zero (0%) had fulfilled the recommended reading level in all four tests. The mean test scores for all non-academic centers (n = 50) were as follows: FKGL (11.14 ± 2.68), GFI (14.39 ± 3.07), CLI (9.29 ± 2.48) and SMOG (13.38 ± 2.03). The mean test scores [SK1] for all academic programs (n = 46) were as follows: FKGL (11.7 ± 2.66), GFI (15.01 ± 2.99), CLI (9.34 ± 1.91) and SMOG (13.71 ± 2.02). A one-sample t test was performed to compare the FKGL, GFI, CLI, and SMOG scores for each hernia center to a value of 6.9 (6.9 or less is considered an acceptable reading level) and a p value of 0.001 for all four tests were noted demonstrating statistical significance. The Academic and Community readability scores for both groups were compared to each other with a two-sample t test with a p value of > 0.05 for all four tests and there were no statistically significant differences. CONCLUSION: Neither Academic nor Community hernia centers met the appropriate reading level of sixth-grade or less. Steps moving forward to improve patient comprehension and/or involving with their care should include appropriate reading level material, identification of a patient with a low literacy level with intervention or additional counseling when appropriate, and the addition of adjunct learning materials such as videos.

Surgery

Guerra-Londono CE, Tarazona CG, Sánchez-Monroy JA, Heppell O, Guerra-Londono JJ, and **Shah R**. The Role of Hyperthermia in the Treatment of Peritoneal Surface Malignancies. *Curr Oncol Rep* 2022; Epub ahead of print. PMID: 35325402. Full Text

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PURPOSE OF REVIEW: Hyperthermia is used to treat peritoneal surface malignancies (PSM), particularly during hyperthermic intraperitoneal chemotherapy (HIPEC). This manuscript provides a focused update of hyperthermia in the treatment of PSM. RECENT FINDINGS: The heterogeneous response to hyperthermia in PSM can be explained by tumor and treatment conditions. PSM tumors may resist hyperthermia via metabolic and immunologic adaptation. The thermodynamics of HIPEC are complex and require computational fluid dynamics (CFD). The clinical evidence supporting the benefit of hyperthermia is largely observational. Continued research will allow clinicians to characterize and predict

the individual response of PSM to hyperthermia. The application of hyperthermia in current HIPEC protocols is mostly empirical. Thus, modeling heat transfer with CFD is a necessary task if we are to achieve consistent and reproducible hyperthermia. Although observational evidence suggests a survival benefit of hyperthermia, no clinical trial has tested the individual role of hyperthermia in PSM.

Surgery

Jayaprakash N, **Pflaum-Carlson J**, **Gardner-Gray J**, **Hurst G**, **Kinni H**, **Tang A**, **Coba V**, and **Rivers EP**. Accelerated Critical Therapy Now in the Emergency Department Using an Early Intervention Team: The Impact of Early Critical Care Consultation for ICU Boarders. *Crit Care Explor* 2022; 4(3):e0660. PMID: 35317241. Full Text

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Evaluate the impact of an emergency department (ED)-based critical care consultation service, hypothesizing early consultation results in shorter hospital length of stay (LOS). DESIGN: Retrospective observational study from February 2018 to 2020. SETTING: An urban academic quaternary referral center. PATIENTS: Adult patients greater than or equal to 18 years admitted to the ICU from the ED. Exclusion criteria included age less than 18 years, do not resuscitate/do not intubate documented prior to arrival, advanced directives outlining limitations of care, and inability to calculate baseline modified Sequential Organ Failure Assessment (mSOFA) score. INTERVENTIONS: ED-based critical care consultation by an early intervention team (EIT) initiated by the primary emergency medicine physician compared with usual practice. MEASUREMENTS: The primary outcome was hospital LOS, and secondary outcomes were hospital mortality, ICU LOS, ventilator-free days, and change in the mSOFA. MAIN RESULTS: A total 1,764 patients met inclusion criteria, of which 492 (27.9%) were evaluated by EIT. Final analysis, excluding those without baseline mSOFA score, limited to 1,699 patients, 476 in EIT consultation group, and 1,223 in usual care group. Baseline mSOFA scores (±sd) were higher in the EIT consultation group at 3.6 (±2.4) versus 2.6 (±2.0) in the usual care group. After propensity score matching, there was no difference in the primary outcome: EIT consultation group had a median (interquartile range [IQR]) LOS of 7.0 days (4.0-13.0 d) compared with the usual care group median (IQR) LOS of 7.0 days (4.0-13.0 d), $p = 0.64$. The median (IQR) boarding time was twice as long subjects in the EIT consultation group at 8.0 (5.0-15.0) compared with 4.0 (3.0-7.0) usual care, $p < 0.001$. CONCLUSIONS: An ED-based critical care consultation model did not impact hospital LOS. This model was used in the ED and the EIT cared for critically ill patients with higher severity of illness and longer ED boarding times.

Surgery

Jesse MT. Addressing Burnout: Complex Solutions Start With Small Steps. *Liver Transpl* 2022; Epub ahead of print. PMID: 35238472. Full Text

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Surgery

Kabbani LS, and Lam MT. Commentary. *Ann Vasc Surg* 2022; Epub ahead of print. PMID: 35248741. Full Text

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Surgery

Simanovski J, and Ralph J. A Scoping Review of the Literature on Sleep Quality in Adult Lung Transplant Recipients. *Prog Transplant* 2022; Epub ahead of print. PMID: 35301887. Full Text

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Introduction: Lung transplant recipients face challenging postoperative complications and are at risk for poor sleep quality. Sleep quality, as a complex clinical phenomenon, has multiple subjective and objective connotations. Measures and definitions of sleep quality are not standardized. Objective: A scoping review methodology was used to systematically map the relevant literature, provide an overview of available sleep quality measures, and to identify knowledge gaps. Methods: A systematic search of published and gray literature enabled knowledge synthesis of the last 10 years of evidence documenting sleep quality in lung transplant recipients. The search revealed 246 articles with only 12 sources meeting the eligibility criteria. Results: Sources varied in terms of definitions and measures of sleep quality. Subjective, objective, or a combination of both measures were used across the relevant literature with findings confirming that poor sleep quality was common in lung transplant recipients. Significant associations with poor sleep quality included younger age, female gender, exposure to tacrolimus, anxiety, and depression. Discussion: Systematic literature assessing sleep quality in lung transplant recipients is sparse and lacks conceptual and operational definitions. Future research can focus on designing prospective observational studies. Subjective and objective measures for sleep quality need to be validated in lung transplant recipients. Further rigorous research is needed to standardize measures of sleep quality and to further examine potential risk factors that affect sleep after lung transplantation.

Surgery

Stefanou A, **Gardner C**, and **Rubinfeld I**. A retrospective study of the effects of minimally invasive colorectal surgery on Patient Safety Indicators across a five-hospital system. *Surg Endosc* 2022; Epub ahead of print. PMID: 35237902. Full Text

BACKGROUND: The Agency for Healthcare Research and Quality uses Patient Safety Indicators (PSI) to gauge quality of care and patient safety in hospitals. PSI 90 is a weighted combination of several PSIs that primarily comprises perioperative events. This score can affect reimbursement through Medicare and hospital quality ratings. Minimally invasive surgery (MIS) has been shown to decrease adverse events and outcomes. We sought to evaluate individual PSI and PSI 90 outcomes of minimally invasive versus open colorectal surgeries using a large medical database from 5 hospitals. METHODS: A health system administrative database including all inpatients from 5 acute care hospitals was queried based on ICD 10 PC codes for colon and rectal surgery procedures performed between January 2, 2018 and December 31, 2019. Surgeries were labeled as MIS (laparoscopic) or open colorectal resection surgery. Patient demographics, health information, and case characteristics were analyzed with respect to surgical approach and PSI events. Statistical relationships between surgical approach and PSI were investigated using univariate methods and multivariate logarithmic regression analysis. PSIs of interest were PSI 8, PSI 9 PSI 11, PSI 12, and PSI 13. RESULTS: There were 1382 operations identified, with 861 (62%) being open and 521 (38%) being minimally invasive. Logistic modeling showed no significant difference between the 2 groups for PSI 3, 6, or 8 through 15. CONCLUSION: Understanding PSI 90 and its components is important to enhance perioperative patient care and optimize reimbursement rates. We showed that MIS, despite providing known clinical benefits, may not affect scores in the PSI 90. Surgical approach may have little effect on PSIs, and other patient and system components that are more important to these outcome measures should be pursued.

Urology

Butaney M, **Levy AC**, and **Rogers CG**. Robotic total and partial adrenalectomy: A step by step approach. *Urol Video J* 2022; 13. PMID: Not assigned. Full Text

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Objective: While open adrenalectomy was performed for many years, minimally invasive adrenalectomy has become the gold-standard for surgical resection of adrenal masses owing to superior perioperative outcomes. The objective of this video is to describe our technique of performing robot-assisted total and partial adrenalectomy. Patients and surgical procedure: In this video, we use the case of a left-sided aldosteronoma to demonstrate our technique of a left robot-assisted total adrenalectomy and a large right-sided tumor with solid enhancing component and mass effect compressing the IVC to demonstrate a right robot-assisted total adrenalectomy. Additionally, we briefly highlight nuances of performing a partial adrenalectomy and the utility of ultrasound in this setting. Results: There were no intraoperative or postoperative complications. All patients were discharged per our routine pathway on post-operative day one. Through our step-by-step video, we demonstrate our technical approach and tips to successfully perform a robotic total and partial adrenalectomy. Conclusion: Robot-assisted adrenalectomy is an effective and well-established option for the management of adrenal masses. The added dexterity and improved visualization provided by the robotic approach allows surgeons to provide patients with an effective, efficient, and oncologically appropriate operation with rapid convalescence.

Urology

ElKarami B, **Deebajah M**, Polk S, **Peabody J**, Shahrrava B, **Menon M**, Alkhateeb A, and Alanee S. Machine learning-based prediction of upgrading on magnetic resonance imaging targeted biopsy in patients eligible for active surveillance. *Urol Oncol* 2022; Epub ahead of print. PMID: 35307289. Full Text

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OBJECTIVE: To examine the ability of machine learning methods to predict upgrading of Gleason score on confirmatory magnetic resonance imaging-guided targeted biopsy (MRI-TB) of the prostate in candidates for active surveillance. SUBJECTS AND METHODS: Our database included 592 patients who received prostate multiparametric magnetic resonance imaging in the evaluation for active surveillance. Upgrading to significant prostate cancer on MRI-TB was defined as upgrading to G 3+4 (definition 1 - DF1) and 4+3 (DF2). Machine learning classifiers were applied on both classification problems DF1 and DF2. RESULTS: Univariate analysis showed that older age and the number of positive cores on pre-MRI-TB were positively correlated with upgrading by DF1 (P-value ≤ 0.05). Upgrading by DF2 was positively correlated with age and the number of positive cores and negatively correlated with body mass index. For upgrading prediction, the AdaBoost model was highly predictive of upgrading by DF1 (AUC 0.952), while for prediction of upgrading by DF2, the Random Forest model had a lower but excellent prediction performance (AUC 0.947). CONCLUSION: We show that machine learning has the potential to be integrated in future diagnostic assessments for patients eligible for AS. Training our models on larger multi-institutional databases is needed to confirm our results and improve the accuracy of these models' prediction.

Urology

Kachroo N, Monga M, and Miller AW. Comparative functional analysis of the urinary tract microbiome for individuals with or without calcium oxalate calculi. *Urolithiasis* 2022; Epub ahead of print. PMID: 35234986. Full Text

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Individuals with urinary stone disease (USD) exhibit dysbiosis in the urinary tract and the loss of Lactobacillus that promote urinary tract health. However, the microbial metabolic functions that differentiate individuals with USD from healthy individuals are unknown. The objective of the current study

was to determine the microbial functions across prokaryotic, viral, fungal, and protozoan domains that are associated with calcium oxalate (CaOx) stone formers through comparative shotgun metagenomics of midstream, voided urine samples for a small number of patients (n = 5 CaOx stone formers, n = 5 healthy controls). Results revealed that CaOx stone formers had reduced levels of genes associated with oxalate metabolism, as well as transmembrane transport, proteolysis, and oxidation-reduction processes. From 17 draft genomes extracted from the data and > 42,000 full length reference genomes, genes enriched in the Control group mapped overwhelming to Lactobacillus crispatus and those associated with CaOx mapped to Pseudomonas aeruginosa and Burkholderia sp. The microbial functions that differentiated the clinical cohorts are associated with known mechanisms of stone formation. While the prokaryotes most differentiated the CaOx and Control groups, a diverse, trans-domain microbiome was apparent. While our sample numbers were small, results corroborate previous studies and suggest specific microbial metabolic pathways in the urinary tract that modulate stone formation. Future studies that target these metabolic pathways as well as the influence of viruses, fungi, and protozoa on urinary tract physiology is warranted.

Conference Abstracts

Administration

Lanfear DE, **Luzum J**, **She R**, **Li J**, **Liu B**, **Peterson E**, and **Williams LK**. VALIDATION OF POLYGENIC SCORE FOR BETA-BLOCKER SURVIVAL BENEFIT IN HEART FAILURE USING THE UNITED KINGDOM BIOBANK. *J Am Coll Cardiol* 2022; 79(9):228. PMID: Not assigned. Full Text

Background: A novel polygenic response predictor (PRP) for beta blocker (BB) survival benefit in heart failure (HF) was recently described which separated European ancestry BB responders from non-responders using a score derived from 44 genetic loci. We tested whether this would replicate in the United Kingdom Biobank (UKB) dataset. Methods: UKB data pull identified patients with a HF diagnosis, genetic data and prescription data. Ejection fraction (EF) data was not available. BB exposure was quantified using BB dose and prescription frequency. The PRP was calculated using the genetic loci, weights, and cutoff value from the original description. Cox models were constructed of time to all-cause mortality adjusted for clinical risk (MAGGIC score), BB propensity score, BB exposure and BB exposure*PRP interaction. Results: Among 7502 HF patients included, 34% were women, 54% had coronary disease, 33% atrial fibrillation, 51% baseline BB usage, and 22% (n=1651) were PRP-predicted responders. Patients in the PRP responder group had strong survival benefit associated with BB exposure (HR=0.55, p=0.016), while PRP non-responders showed little BB effect (HR=0.92, p=0.466) and this difference was significant (p-interaction =0.051). Survival curves by PRP group and dichotomized BB exposure (high vs. low) are shown in the figure. Conclusion: The polygenic BB response predictor replicated in HF patients from the UKB regardless of EF. This innovative genomic medicine tool requires testing in a clinical trial. [Formula presented]

Administration

Vendittelli P, **Coriasso N**, **Boshara A**, **Makki T**, **Tita C**, and Zein RK. DON'T BLAME THE VACCINE. *J Am Coll Cardiol* 2022; 79(9):2570. PMID: Not assigned. Full Text

Background: The mRNA COVID vaccine is a rare cause of myocarditis in young patients. We describe a case of cardiogenic shock with extensive workup ruling out COVID vaccine induced myocarditis. Case: 42-year-old female who drinks 5 Monster energy drinks and 3-4 cups of coffee daily presented to the hospital with palpitations two weeks following her mRNA COVID vaccine. EKG showed atrial tachycardia with heart rates of 160 beats per minute. Adenosine and Lopressor were administered resulting in hemodynamic instability requiring norepinephrine. An echocardiogram showed dilated cardiomyopathy with ejection fraction of 15%. Right heart catheterization was performed, and the cardiac index was 1.22 L/min/m^2, systemic vascular resistance was 1918 dynes*sec*cm-5 and wedge pressure was 31 mm Hg. The patient was started on nitroprusside, furosemide, and milrinone drips and she began to improve. The patient was adamant the vaccine is what triggered her heart failure and extensive testing was performed to rule out COVID vaccine induced myocarditis. Workup showed normal coronary arteries and no evidence of infiltrative disease or myocarditis on cardiac MRI. The etiology was from tachycardia induced

cardiomyopathy triggered by excessive stimulants and the patient had successful atrial tachycardia ablation of the right superior pulmonary vein. She was discharged on medical therapy for heart failure and advised to stop drinking energy drinks. Decision-making: Once the patient did not respond to the rate controlling agents an echocardiogram showed reduced ejection fraction. Right heart catheterization confirmed cardiogenic shock and nitroprusside and milrinone were started to help reduce afterload and improve contractility. Workup to exclude COVID induced myocarditis lead to the diagnosis of tachycardia induced cardiomyopathy and atrial tachycardia ablation was performed. Conclusion: We report a case of cardiogenic shock with workup diagnosing tachycardia induced cardiomyopathy induced from a combination of excessive monster energy drinks and coffee. She was treated successfully with afterload reduction, inotrope support, and atrial tachycardia ablation.

Behavioral Health Services/Psychiatry/Neuropsychology

Williams A, **Gilbert M**, and **Siddiqui F**. Cannabis Use, Pain, and Outcomes in Patients with Head and Neck Cancer Treated with Radiotherapy. *Psychooncology* 2022; 31:71-72. PMID: Not assigned. Full Text

Background/Purpose: Marijuana use in the population is increasing as states continue to allow for both medicinal and recreational use. As such, the prevalence of marijuana uses among patients presenting for treatment of head and neck cancer (HNC) is likely to increase as well. Anecdotally, patients are asking about marijuana use during cancer treatment and, to date, oncology professionals are lacking sufficient data to advise their patients on use during cancer care. Further, the impact of marijuana use on pain management, local disease control, and survival in HNC is not well understood. The current study examines the associations between marijuana use, pain management, and cancer outcomes in patients with HNC squamous cell carcinoma. Methods: Patients with psychosocial and substance abuse history who were treated with either definitive or adjuvant radiotherapy between August 2018 and March 2020 were included. Overall survival (OS) and disease-free survival (DFS) were compared between current marijuana users and non-users using Kaplan-Meier curves and log-rank tests. Results: 148 patients with HNC were included (mean age = 62.1 years, SD = 9.1), 78% were male, 73% were white. 15% of patients reported marijuana use at time of initial diagnosis and 34% reported a history of marijuana use. Older patients and males were more likely to be currently using marijuana (p = 0.005 and p = 0.04, respectively). There were no differences between current and historical/never users on self-reported worst pain or objective measures of treatment toxicity, current marijuana users were more likely to require narcotic pain medications and require a greater number of types of pain medications during treatment (p = 0.002 and p = 0.007, respectively). No other differences were found between current or historical/never users. Conclusions and Implications: Marijuana use in HNC may result in more difficulty managing pain during treatment. Further research is needed to better understand marijuana use during cancer treatment, particularly frequency and method of use, outcomes, and quality of life.

Cardiology/Cardiovascular Research

Chiang CSM. 'ORBITAL-TRIPSY' - NOVEL COMBINATION OF ORBITAL ATHERECTOMY AND INTRAVASCULAR LITHOTRIPSY IN CALCIFIED CORONARY DISEASE. *J Am Coll Cardiol* 2022; 79(9):2858. PMID: Not assigned. Full Text

Background: Calcified coronary lesions are notorious for posing technical difficulty during angioplasty. Here we report the Novo combination of Shockwave Lithotripsy after Orbital Atherectomy. Case: An 81-year-old man was admitted for hemodynamically stable NSTEMI. He had a past medical history of AF, HT, DM, COPD, hepatitis B cirrhosis, and moderate-severe aortic stenosis. Coronary angiogram showed heavily calcified LM and TVD. He was stratified as a high risk CABG candidate. We proceeded high-risk PCI to RCA first Decision-making: Optical coherence tomography (OCT) was performed to the RCA. At the minimal luminal area (MLA), there was circumferential thick calcification, with area of 1.55 mm2. IVL was performed but failed to open up the heavily calcified mid-RCA lesion. With absence of significant dissection from OCT, OA was performed at low and high-speed. The lesion at MLA was successfully cracked with luminal gain to 2.23 mm2 from 1.55 mm2. However, the luminal size at the MLA was still quite small with reference to the vessel size, and the calcium remained very thick even after multiple arthrectomies. Hence, IVL was performed again. After Orbital-Tripsy, very significant luminal gain was observed with angiogram and OCT. Ostial to mid-distal RCA was stented with 2 overlapping drug-eluting stents. Conclusion: OA can effectively debulk calcium to facilitate further lesion cracking with IVL, which

was demonstrated to be safe and synergistic to each other, attaining stepwise gain in luminal area [Formula presented]

Cardiology/Cardiovascular Research
Devgun J, **Abdelrahim E**, **Ahmed F**, **Kazem A**, **Singh-Kucukarslan G**, **Nemeh H**, and **Maskoun W**. TRICUSPID VALVE DISEASE AND RIGHT VENTRICULAR DYSFUNCTION AFTER RIGHT VENTRICULAR TRANSVENOUS LEAD PLACEMENT IN PATIENTS WITH TRICUSPID VALVE PROSTHESIS. *J Am Coll Cardiol* 2022; 79(9):1694. PMID: Not assigned. Full Text

Background First time transvenous right ventricular (RV) lead implant after tricuspid valve (TV) repair or bioprosthetic replacement is common. We evaluated outcomes in TV regurgitation (TR) and RV function in this population. Methods We conducted single-center retrospective study on patients with TV repair or replacement from 2000 to 2020 followed by first-time transvenous RV lead implant. Primary outcomes were change in TR severity (defined as defined as none/trivial, mild, moderate, moderate-severe, or severe) and RV function (normal, mild, moderate, or severe). Baseline and follow-up echocardiogram (ECHO) data was reviewed, as well as time to death. Results 52 patients were identified (29 female, 47 had hypertension, 41 had atrial fibrillation, 49 had TV repair, 3 had replacement). Median time from surgery to implant was 1.7 months and to last ECHO was 39.7 months. In TV repair, baseline TR was none/trivial in 15 (30.6%) and mild in 21 (42.8%) patients. RV function was normal in 33 (67.3%) patients. 58% had worsened TR (mean 0.9 levels) (Figure). No TR change was seen in TV replacement. Mean worsening RV function was by 0.9 levels. There was statistically significant correlation with RV pacing and RV dysfunction (Spearman correlation coefficient 0.37, $p = 0.017$), but not with change in TR ($p = 0.36$). 22 patients died at median follow-up (48.9 months). Conclusion Presence of an RV lead after TV repair correlated with worsening TR. Higher RV pacing level correlated with RV dysfunction but not TR severity. [Formula presented]

Cardiology/Cardiovascular Research
Dulgar K, **Lekura J**, **Pyle J**, **Kalus J**, **Agnello M**, **Loveland L**, **Lozo J**, **Abdallah N**, **Senneff T**, **Kim HE**, **Grafton G**, **Williams CT**, and **To L**. EVALUATION OF GUIDELINE DIRECTED MEDICAL THERAPY IN A PHARMACIST-LED HEART FAILURE CLINIC. *J Am Coll Cardiol* 2022; 79(9):280. PMID: Not assigned. Full Text

Background: Guideline directed medical therapy (GDMT) for the treatment of heart failure with reduced ejection fraction (HFrEF) improves morbidity and mortality. According to the CHAMP-HF registry, only 15% of patients with HFrEF achieve target dosing. Published literature reports increased achievement of GDMT by 25-40% through a multidisciplinary approach. However, the pharmacists' role on the impact of GDMT is not well described. The purpose of this study is to evaluate the impact that the CVD Ambulatory Care Pharmacy Clinic has on achievement of GDMT for patients with HFrEF. Methods: This is the interim analysis of an IRB approved retrospective cohort study. This study compares achievement of GDMT in HFrEF patients managed by the pharmacy clinic versus the control group. GDMT is defined as achievement of target dosing or maximum tolerated doses. Control group represents those not seen by CVD Pharmacy clinic. Inclusion criteria includes adult patients with EF ≤ 45%, hospitalization in the previous 12 months, followed by a cardiologist within the health system, and not on maximum tolerated doses of GDMT. The primary outcome is the number of patients on GDMT 12 months after the initial visit. Secondary outcomes include days from initial visit until GDMT, number of patients on moderate dosing of GDMT and change in EF after GDMT. Patients were enrolled from October 1, 2019 through September 30, 2020. Results: Achievement of GDMT at 12 months was 67.2% (39/58) in the intervention group compared to 16.2% (7/43) in the control ($P < 0.001$). Days to GDMT was a median of 95.5 [57-175.5] days and 143 [64-214] days for the intervention and control group respectively ($P = 0.493$). In the intervention group, 50% (29/58) of patients achieved moderate dosing at 12 months compared to 11.6% (5/43) in the control group ($P<0.001$). Patients in the intervention group who had an echo after achieving GDMT had a median increase in EF of 12% [5-20] after GDMT achievement. For all patients who achieved GDMT, 32.6% (15/46) achieved target dosing of medications. Conclusion: The CVD Ambulatory Care Pharmacy Clinic was associated with higher rates of GDMT achievement compared to the control and a shorter time to GDMT achievement.

Cardiology/Cardiovascular Research

Gelovani D, **Mahmood S**, **Wang DD**, **Frisoli TM**, **Lee JC**, **Villablanca PA**, **Chiang M**, **Engel-Gonzales P**, **Wyman JF**, **O'Neill B**, **O'Neill WW**, and **Eng MH**. INITIAL EXPERIENCE WITH LITHOTRIPSY FOR MITRAL BALLOON VALVULOPLASTY. *J Am Coll Cardiol* 2022; 79(9):577. PMID: Not assigned. Full Text

Background: Mitral annular calcification (MAC) causes degeneration of the mitral valve function. Since these patients are poor surgical candidates, options are limited to percutaneous solutions. Use of balloon lithotripsy (BL) to augment mitral balloon valvuloplasty (MBV) is a novel technique for treatment of MAC-related mitral stenosis (MS). Methods: Single-center retrospective review of 35 consecutive MBV for MAC cases at Henry Ford from 3/2013 to 4/2021. Outcome variables are reported as median and interquartile ranges (IQR). Chi-squared and Wilcoxon-signed rank tests were used to compare categorical and continuous variables respectively using 95% confidence intervals for statistical significance. Procedural success was defined as a final mitral valve area ≥1.5 cm2 or ≥50% reduction in gradient. Results: Of 35 MBV cases done for MAC, 5 utilized lithotripsy balloons to augment valvuloplasty results (Table). Mean baseline gradients were similar and right ventricular systolic pressures trended higher for BL cases. Cases utilizing lithotripsy were longer and utilized more fluoroscopy time but the final invasive gradient trended lower (non-BL 7mmHg [4, 9] vs. BL 1 mmHg [0,5] p=0.113), therefore, higher rates of procedural success were seen (non-BL 47% vs. BL 80%, p=0.2). Survival analysis was hampered due to loss of follow-up in the BL group. Conclusion: BL appears to augment immediate valvuloplasty results. Further studies regarding the durable impact of balloon lithotripsy on MBV are warranted. [Formula presented]

Cardiology/Cardiovascular Research

Ghandour AH, **Gupta K**, **Do AP**, **Alqarqaz M**, and **Zweig B**. DOUBLE-TROUBLE: TAKOTSUBO AND ACUTE CORONARY SYNDROME IN A YOUNG WOMAN. *J Am Coll Cardiol* 2022; 79(9):2572. PMID: Not assigned. Full Text

Background: The original case series of patients with Takotsubo Syndrome (TTS) reported no significant epicardial coronary artery disease during angiography. However, recent evidence suggests an increasing overlap between the two diseases. We report a case of a 48-year old woman who had untreated generalized anxiety disorder and presented with angina. Case: A 48-year old woman with untreated general anxiety disorder presented with a 5 hour history of angina. An electrocardiogram demonstrated a prolonged QTc, no ST segment changes and new T-wave inversions in the anterolateral leads. High-sensitivity troponin was 4,336 ng/L and her InterTAK score was 91 with a 99.6% probability of TTS. Decision-making: Due to her persistent chest pain and EKG changes the patient underwent emergent left heart catheterization which showed critical occlusion of the 1st diagonal and 71% stenosis of the distal left circumflex. She underwent a primary PCI of both lesions. Her chest pain resolved after 6 hours of a nitrolgycerin infusion postoperatively and a transthoracic echocardiogram showed hypokinesis of the mid-distal apical, periapical, septal, lateral, inferior and anterior wall with an ejection fraction of 30-35%. The distribution of hypokinesia was out of proportion to the territory supplied by the culprit artery, suggesting a possibility of the apical type of Takotsubo syndrome. She was started on guideline-directed medical therapy for heart failure with reduced ejection fraction and dual antiplatelet therapy Conclusion: Patients with TTS may have coexistent significant epicardial CAD. Prolonged QTc and lack of ST-segment elevation in patients with CAD may help identify an additional diagnosis of TTS.

Cardiology/Cardiovascular Research

Gupta K, **Pate M**, **Kakar TS**, **Di Carli MF**, **Ananthasubramaniam K**, **Prabhu SD**, and **Bajaj NS**. NON-INVASIVE ASSESSMENT OF MYOCARDIAL ENERGETICS USING 11-C ACETATE POSITRON EMISSION TOMOGRAPHY: SYSTEMATIC REVIEW AND META-ANALYSIS. *J Am Coll Cardiol* 2022; 79(9):1321. PMID: Not assigned. Full Text

Background 11-C acetate PET is a non-invasive imaging modality to assess myocardial oxygen consumption (MVO2), and external efficiency (MEE). We conducted a systematic review and meta-analysis of available literature on this topic. Methods We searched electronic databases from inception to September 15, 2021, for all studies using 11C-Acetate PET in humans and patients with CVD at rest. Data are presented as mean with 95% CI. Results 54 studies with 1,182 participants (337 healthy, 845

patients with any CVD) met our inclusion criteria. Mean MVO2 and MEE in studies with healthy controls was 0.11 (0.09, 0.13, I2=99.3%) ml min-1g-1 and 27% (22, 33 I2=98.3%), respectively (Figure). Mean MEE in HFrEF, HFpEF, AS and HCM was 15% (13, 18), 13% (12, 14), 23% (20, 25) and 19% (CI 17, 22), respectively. In HFrEF, both mean MVO2 (difference -0.02,-0.03, -0.01) and MEE (difference -9%, [-13, -6]) were lower vs. healthy controls. In HFpEF, mean MVO2 was higher (difference 0.03, -0.01, 0.07), but mean MEE was similar. In aortic stenosis, mean MVO2 was higher (difference 0.03, [0.01, 0.05]) and mean MEE lower (difference -7%, [-16, 1]) vs. healthy controls. In HCM, mean MVO2 was higher (WMD 0.01, [0.00, 0.02]), and mean MEE was lower (difference -21%, [-33, -8]). Conclusion Assessment of myocardial energetics using 11-C acetate PET can help understand the pathophysiology of distinct CVD. There is significant heterogeneity in the current literature, and there is an unmet need to standardize protocols and reporting methods. [Formula presented]

Cardiology/Cardiovascular Research

Kazem A, **Al-Darzi W**, **Gorgis S**, **Sadiq O**, and **Parikh S**. LEFT ATRIAL COMPRESSION FROM ACHALASIA - THE DIAGNOSTIC POWER OF ECHOCARDIOGRAM. *J Am Coll Cardiol* 2022; 79(9):3027. PMID: Not assigned. Full Text

Background: Left atrial compression by an extracardiac mass can arise from multiple structures surrounding the heart. Differentials include hiatal hernias, mediastinal masses, dissecting aortic aneurysms, esophageal malignancies, and rarely esophageal abnormalities such as achalasia. We present a case of a patient who during a routine transthoracic echocardiogram (TTE) was found to have left atrial compression secondary to achalasia, determined using appropriate maneuvers during image acquisition. Case: A 69-year-old female with diabetes underwent a TTE as part of workup for labile, uncontrolled blood pressure. Simultaneously, she was also being worked up for symptoms of dysphagia, weight loss and chronic cough. TTE revealed a 3.3 x 5 cm heterogeneous extracardiac mass compressing the left atrium. Decision-making: To determine the source of the mass, she was given a carbonated beverage to drink during the imaging acquisition, which was seen within the mass with a change in echo density, confirming GI origin. Imaging with CT scan revealed a dilated esophagus, and furthermore, EGD and esophageal manometry confirmed a diagnosis of achalasia. Conclusion: Echocardiographic imaging, with appropriate maneuvers, can be effective in identifying masses of gastrointestinal origin, differentiating them from vascular or mediastinal origin. Echocardiography has shown to be a strong, non-invasive tool to not only diagnose cardiac diseases, but also extracardiac manifestations of various organ systems. [Formula presented]

Cardiology/Cardiovascular Research

Kazem A, **Mohammed M**, **Chiang M**, **Gonzales PE**, **Frisoli TM**, **Villablanca PA**, **Lee JC**, **Wang DD**, **Wyman JF**, **O'Neill B**, **O'Neill WW**, and **Eng MH**. SAFETY AND FEASIBILITY OF TRANSCAVAL APPROACH FOR TRANSCATHETER AORTIC VALVE REPLACEMENTS. *J Am Coll Cardiol* 2022; 79(9):657. PMID: Not assigned. Full Text

Background: Alternative access is used in a minority of transcatheter aortic valve replacement (TAVR) cases and include transcarotid, transaxillary, transthoracic and transcaval access. Transcaval data has been limited and not performed with contemporary valve platforms. We present single center transcaval cases done with low profile TAVR platforms. Methods: This single center retrospective study analyzed 127 consecutive patients undergoing transcaval TAVR between September 2015 and April 2020. Demographic, clinical & procedural outcome variables were reported as interquartile ranges and the data was analyzed using SPSS v28. Kaplan Meier method was used to estimate survival. Results: Within the cohort of 127 patients, 48.8% were male. The average age was 77.3 years [70.7-84.7]. Mean baseline aortic gradient was 35.5 mmHg [24.9-46]. TAVR was successful in all patients and 97.6% survived to hospital discharge. The rate of VARC-3 major bleeding was 22% with 3.9% developing major vascular complications. Covered stent implantation occurred in 7.9% of patients. No annular dissection or cardiac perforation was encountered. Median follow up time was 1.2 years [0.6, 2.5] with a mean survival of 3.8 years [3.2-4.3] (Figure 1). Conclusion: TAVR from transcaval access demonstrated a long mean survival time in successful cases. There was a low rate of VARC-3 major vascular complications despite elevated major bleeding rates. Prospective comparative studies in alternative access are warranted. [Formula presented]

Cardiology/Cardiovascular Research

Lanfear DE, **Luzum J**, **She R**, **Li J**, **Liu B**, **Peterson E**, and **Williams LK**. VALIDATION OF POLYGENIC SCORE FOR BETA-BLOCKER SURVIVAL BENEFIT IN HEART FAILURE USING THE UNITED KINGDOM BIOBANK. *J Am Coll Cardiol* 2022; 79(9):228. PMID: Not assigned. Full Text

Background: A novel polygenic response predictor (PRP) for beta blocker (BB) survival benefit in heart failure (HF) was recently described which separated European ancestry BB responders from non-responders using a score derived from 44 genetic loci. We tested whether this would replicate in the United Kingdom Biobank (UKB) dataset. Methods: UKB data pull identified patients with a HF diagnosis, genetic data and prescription data. Ejection fraction (EF) data was not available. BB exposure was quantified using BB dose and prescription frequency. The PRP was calculated using the genetic loci, weights, and cutoff value from the original description. Cox models were constructed of time to all-cause mortality adjusted for clinical risk (MAGGIC score), BB propensity score, BB exposure and BB exposure*PRP interaction. Results: Among 7502 HF patients included, 34% were women, 54% had coronary disease, 33% atrial fibrillation, 51% baseline BB usage, and 22% (n=1651) were PRP-predicted responders. Patients in the PRP responder group had strong survival benefit associated with BB exposure (HR=0.55, p=0.016), while PRP non-responders showed little BB effect (HR=0.92, p=0.466) and this difference was significant (p-interaction =0.051). Survival curves by PRP group and dichotomized BB exposure (high vs. low) are shown in the figure. Conclusion: The polygenic BB response predictor replicated in HF patients from the UKB regardless of EF. This innovative genomic medicine tool requires testing in a clinical trial. [Formula presented]

Cardiology/Cardiovascular Research

Lee Y, Jehangir Q, **Lin CH**, **Li P**, Krishnamoorthy G, Sule A, Apala D, Halabi AR, **Patel K**, **Wang DD**, **Poisson L**, and Nair GB. RISK FACTORS OF ARTERIAL THROMBOEMBOLISM IN HOSPITALIZED COVID-19 PATIENTS: A MULTICENTER COHORT STUDY. *J Am Coll Cardiol* 2022; 79(9):1842. PMID: Not assigned. Full Text

Background: Endothelial cell dysfunction from infection by SARS-CoV-2 and inflammatory cytokines leading to hyperinflammatory and hypercoagulable state is thought to be the mechanism of arterial thromboembolism (ATE) in COVID-19 patients. COVID-19 infection is known to be an independent risk factor for acute stroke and myocardial infarction (MI). However, data on the risk factors of ATE in hospitalized COVID-19 patients is limited. Methods: This retrospective, multicenter cohort study included adult patients admitted to one quaternary care and three community hospitals with PCR-proven SARS-CoV-2 infection between 3/1/2020 and 12/31/2020. The composite outcome was in-hospital ATE events, including acute ischemic stroke, MI, and other ATE identified by ICD-10 codes. Student t-test was conducted for continuous variables and the Chi-square test for categorical variables. Multivariate logistic regression using forward selection was conducted. All statistical tests were 2-sided with an α level of 0.05. All data was analyzed using R version 4.0.4. Results: The cohort included 3531 patients with 371 (10.5%) patients who developed acute ATE. There were 398 ATE events: 270 patients had MI, 43 had stroke, 85 had other ATE, 12 had MI + stroke, 13 had MI + other ATE, and 2 had stroke + other ATE. The model suggested that initial systolic blood pressure (BP) <90 mmHg and >160 mmHg; elevated initial biomarkers including B-type natriuretic peptide (>100 pg/mL), troponin-I (>0.03 ng/mL), lactate dehydrogenase (>192 U/L), creatine phosphokinase (male >280 U/L and female >155 U/L), C-reactive protein (>0.5 mg/dL), leukocytes (>11 K/uL), lactate (>2.2 mmol/L), and aspartate aminotransferase (>41 U/L); presenting hypoalbuminemia (<3.5 g/dL) and hypomagnesemia (<1.8 mg/dL); age >60; male sex; and history of cerebrovascular accident (CVA), coronary artery disease (CAD), hyperthyroidism, and cigarette smoking were associated with an increased risk of ATE (all p<0.05). Conclusion: Hypo or hypertension on admission, elevated inflammatory and cardiac markers, hypoalbuminemia, hypomagnesemia, smoking, and comorbidities including CAD and CVA are associated with ATE in hospitalized COVID-19 patients.

Cardiology/Cardiovascular Research

Mahmood S, **Almajed M**, **Nona P**, and **Villablanca PA**. NEUROLOGIC COMPLICATIONS OF TRANSAXILLARY ACCESS IN TAVR - A CASE OF POSTPROCEDURAL ULNAR AND MEDIAN NERVE INJURY. *J Am Coll Cardiol* 2022; 79(9):2952. PMID: Not assigned. Full Text

Background: Peripheral nerve injuries secondary to endovascular procedures are relatively rare but cause significant functional impairment. With transaortic valve replacement (TAVR), these injuries more commonly occur during axillary access compared to femoral and radial access (due to its proximity to brachial plexus). While hematoma and pseudoaneurysm formation are the more common complications, nerve injury may occur secondary to compression or direct needle puncture. Case: A 76-year-old male with severe aortic stenosis underwent two failed TAVR attempts due to poor access. Initial attempts at femoral access and transcaval access were aborted due to existing abdominal aortic endograft. Further attempts via carotid access were aborted due to stenosis. An attempt at left axillary access was then performed and TAVR was successful. Postoperatively (day 0), the patient developed left upper extremity (LUE) numbness over the 4th and 5th digits, medial palm, and dorsum of the hand with weakness when holding objects. Our neurological evaluation identified a total ulnar nerve (UN) and partial median nerve (MN) injury. Decision-making: Transaxillary access for TAVR is a disfavored approach due to the better outcomes when performed with other access sites. After out identification of a postprocedural nerve injury, we ordered a LUE arterial duplex ultrasound (US) and CT angiogram which excluded hematoma or pseudoaneurysm formation. US of the left brachial plexus revealed questionable edematous change at the take-off of the left UN and MN. Patient's symptoms did not improve postoperatively until his discharge from the hospital (day 3) and an outpatient nerve conduction study was scheduled. Conclusion: We report a rare case of proximal UN and MN injury in a patient who underwent transaxillary TAVR due to the lack of alternative access. Prompt evaluation to rule-out vascular mechanism of injury in this patient was critical as early intervention results reduce further morbidity. With symptoms of motor and sensory brachial plexopathy and concerning imaging findings, the patient was scheduled for outpatient follow-up.

Cardiology/Cardiovascular Research

Mahmood S, **Gelovani D**, **Gupta K**, **Chiang M**, **Engel-Gonzales P**, **Frisoli TM**, **Villablanca PA**, **Lee JC**, **Wang DD**, **Wyman JF**, **O'Neill B**, **O'Neill W**, and **Eng MH**. SURVIVAL OF PATIENTS WITH RHEUMATIC AND NON-RHEUMATIC MITRAL VALVE STENOSIS AFTER VALVULOPLASTY. *J Am Coll Cardiol* 2022; 79(9):880. PMID: Not assigned. Full Text

Background: Non-rheumatic (NR) mitral stenosis (MS) due to mitral annular calcification (MAC) presents in elderly patients and is difficult to treat due elevated surgical risk. In search for alternative treatments, mitral balloon valvuloplasty (MBV) has been performed in non-rheumatic mitral stenosis but no outcomes have been described in this cohort. Methods: Single center retrospective review of 85 consecutive MBV cases at Henry Ford from 3/2013 to 4/2021. Clinical and procedural outcome variables are reported as median and interquartile ranges (IQR). Kaplan-Meier method was used to estimate survival. Chi-squared and Wilcoxon-signed rank tests were used to compare categorical and continuous variables respectively using 95% confidence intervals for statistical significance. Results: Of 85 MBV cases, 50 and 35 were performed for rheumatic (R) and NR MS respectively. NR patients tended to be older and were more likely to have hypertension, diabetes, coronary artery disease, chronic kidney disease, aortic valve procedures. Rates of ≥moderate-severe mitral regurgitation (MR) (R 18% vs. NR 12% p=0.4) and procedure success (R 57% vs NR 42.9% p=0.2) were similar. Median follow up for the entire cohort was 0.5 yrs [0.1, 2.1]. Survival was significantly better for rheumatic cases (Figure). Conclusion: Survival of NR MS post-valvuloplasty is significantly attenuated as compared to those with R MS. Larger prospective studies are necessary in understanding optimal bridging therapies for patients with MAC. [Formula presented]

Cardiology/Cardiovascular Research

McCord JK, **Cook B**, **Gandolfo C**, **Parikh S**, **Klausner H**, **Abdul-Nour K**, **Lewandowski A**, **Hudson MP**, **Perrotta GS**, **Zweig B**, **Gunaga S**, **Lanfear DE**, **Gindi R**, Levy PD, Mills NL, Mahler S, **Kim HE**, Danagoulian S, **Tang A**, **Nassereddine H**, **Oudeif A**, **Malette K**, **Krupp S**, Keerie C, and **Miller J**. RACE-IT- RAPID MYOCARDIAL INFARCTION EXCLUSION USING AN ACCELERATED HIGH-

SENSITIVITY CARDIAC TROPONIN I PROTOCOL: A PROSPECTIVE TRIAL. *J Am Coll Cardiol* 2022; 79(9):951. PMID: Not assigned. Full Text

Background We compared the safety of our standard protocol to a new 0/1-hour high-sensitivity cardiac troponin I (hs-cTnI) protocol for exclusion of myocardial infarction (MI). Methods A stepped-wedge randomized trial of patients evaluated for possible MI in 9 Emergency Departments (ED) (urban and suburban) in the Henry Ford Health System (Detroit, MI) were studied from 7/2020-3/2021. Trial arms included the new 0/1-hour protocol and standard care. A hs-cTnI assay from Beckman Coulter was used (99th percentile 18 ng/L). Patients were excluded if any hs-cTnI was >18 ng/L within 3 hours or they were admitted to the hospital. In the 0/1-hour algorithm, MI was excluded if hs-cTnI <4 ng/L at time 0, or = 4 ng/L at time 0 with 1 hour <8 ng/L. The algorithm advised ED discharge if patients ruled-out by the 0/1-hour protocol. Otherwise, the protocol included another hs-cTnI at 3 hours. In the standard care arm, hs-cTnI was measured at 0 and 3 hours with values ≤18 ng/L used to exclude AMI and guide ED discharge decisions. The primary outcome was adjudicated death or MI at 30 days. The analysis included a mixed effect model adjusting for ED site, time, sex, age, and race. Results There were 22,345 patients in the trial. At 30 days there were 24 deaths and 26 MIs. There was no significant difference between the death/MI rate between the standard of care group and the accelerated protocol (Table). Conclusion Implementation of the 0/1-hour algorithm to evaluate for MI in the ED was safe when compared to standard care. [Formula presented]

Cardiology/Cardiovascular Research

Vendittelli P, **Coriasso N**, **Boshara A**, **Makki T**, **Tita C**, and Zein RK. DON'T BLAME THE VACCINE. *J Am Coll Cardiol* 2022; 79(9):2570. PMID: Not assigned. Full Text

Background: The mRNA COVID vaccine is a rare cause of myocarditis in young patients. We describe a case of cardiogenic shock with extensive workup ruling out COVID vaccine induced myocarditis. Case: 42-year-old female who drinks 5 Monster energy drinks and 3-4 cups of coffee daily presented to the hospital with palpitations two weeks following her mRNA COVID vaccine. EKG showed atrial tachycardia with heart rates of 160 beats per minute. Adenosine and Lopressor were administered resulting in hemodynamic instability requiring norepinephrine. An echocardiogram showed dilated cardiomyopathy with ejection fraction of 15%. Right heart catheterization was performed, and the cardiac index was 1.22 L/min/m², systemic vascular resistance was 1918 dynes*sec*cm-5 and wedge pressure was 31 mm Hg. The patient was started on nitroprusside, furosemide, and milrinone drips and she began to improve. The patient was adamant the vaccine is what triggered her heart failure and extensive testing was performed to rule out COVID vaccine induced myocarditis. Workup showed normal coronary arteries and no evidence of infiltrative disease or myocarditis on cardiac MRI. The etiology was from tachycardia induced cardiomyopathy triggered by excessive stimulants and the patient had successful atrial tachycardia ablation of the right superior pulmonary vein. She was discharged on medical therapy for heart failure and advised to stop drinking energy drinks. Decision-making: Once the patient did not respond to the rate controlling agents an echocardiogram showed reduced ejection fraction. Right heart catheterization confirmed cardiogenic shock and nitroprusside and milrinone were started to help reduce afterload and improve contractility. Workup to exclude COVID induced myocarditis lead to the diagnosis of tachycardia induced cardiomyopathy and atrial tachycardia ablation was performed. Conclusion: We report a case of cardiogenic shock with workup diagnosing tachycardia induced cardiomyopathy induced from a combination of excessive monster energy drinks and coffee. She was treated successfully with afterload reduction, inotrope support, and atrial tachycardia ablation.

Diagnostic Radiology

Mshelbwala FS, **Hong X**, and **Ananthasubramaniam K**. BACK TO THE BASICS: ALL THAT GLITTERS IS NOT SARCOIDOSIS. *J Am Coll Cardiol* 2022; 79(9):3087. PMID: Not assigned. Full Text

Background: 18-F-fluorodeoxyglucose positron emission tomography (FDG-PET) plays an important role in the diagnosis and management of cardiac sarcoidosis (CS). False positive study can be seen in conditions that increase myocardial FDG uptake or due to artifacts. Case: An 83-year-old male with mitral regurgitation who underwent Tendyne Transmitral Valve Implantation was referred for FDG-PET due to bilateral hilar lymphadenopathy on recent CT. FDG-PET showed moderate area of severely decreased

perfusion involving the distal lateral wall and apical wall at rest. There was increased FDG uptake in the distal lateral and apical wall on the attenuation corrected images (AC) that was not present on the non-AC images. Decision-making: FDG accumulation in myocardial tissue is only indicative of increased cellular metabolic activity and is not specific for CS. Several reports of non-specific FDG uptake around prosthetic cardiac valves and devices have been reported. Although the uptake pattern in this case was consistent with active CS, it became apparent that this was an artifact due to the Tendyne prosthesis after the CT data of the Tendyne valve location was co-registered with the FDG data. Conclusion: FDG-PET is frequently used in diagnosing active CS and for disease monitoring. When interpreting the images, taking into consideration the clinical context, patient's history and supporting data is vital to avoid misdiagnosis. Thus, going to basics of integrating all data cannot be over-emphasized. [Formula presented]

Emergency Medicine

McCord JK, **Cook B**, **Gandolfo C**, **Parikh S**, **Klausner H**, **Abdul-Nour K**, **Lewandowski A**, **Hudson MP**, **Perrotta GS**, **Zweig B**, **Gunaga S**, **Lanfear DE**, **Gindi R**, Levy PD, Mills NL, Mahler S, **Kim HE**, Danagoulian S, **Tang A**, **Nassereddine H**, **Oudeif A**, **Malette K**, **Krupp S**, Keerie C, and **Miller J**. RACE-IT- RAPID MYOCARDIAL INFARCTION EXCLUSION USING AN ACCELERATED HIGH-SENSITIVITY CARDIAC TROPONIN I PROTOCOL: A PROSPECTIVE TRIAL. *J Am Coll Cardiol* 2022; 79(9):951. PMID: Not assigned. Full Text

Background We compared the safety of our standard protocol to a new 0/1-hour high-sensitivity cardiac troponin I (hs-cTnI) protocol for exclusion of myocardial infarction (MI). Methods A stepped-wedge randomized trial of patients evaluated for possible MI in 9 Emergency Departments (ED) (urban and suburban) in the Henry Ford Health System (Detroit, MI) were studied from 7/2020-3/2021. Trial arms included the new 0/1-hour protocol and standard care. A hs-cTnI assay from Beckman Coulter was used (99th percentile 18 ng/L). Patients were excluded if any hs-cTnI was >18 ng/L within 3 hours or they were admitted to the hospital. In the 0/1-hour algorithm, MI was excluded if hs-cTnI <4 ng/L at time 0, or = 4 ng/L at time 0 with 1 hour <8 ng/L. The algorithm advised ED discharge if patients ruled-out by the 0/1-hour protocol. Otherwise, the protocol included another hs-cTnI at 3 hours. In the standard care arm, hs-cTnI was measured at 0 and 3 hours with values ≤18 ng/L used to exclude AMI and guide ED discharge decisions. The primary outcome was adjudicated death or MI at 30 days. The analysis included a mixed effect model adjusting for ED site, time, sex, age, and race. Results There were 22,345 patients in the trial. At 30 days there were 24 deaths and 26 MIs. There was no significant difference between the death/MI rate between the standard of care group and the accelerated protocol (Table). Conclusion Implementation of the 0/1-hour algorithm to evaluate for MI in the ED was safe when compared to standard care. [Formula presented]

Hematology-Oncology

Leal TA, Berz D, **Rybkin I**, Iams WT, Bruno D, Blakely C, Spira A, Patel M, Waterhouse DM, Richards D, Pham A, Jotte R, Garon EB, Hong DS, Shazer R, Yan X, Latven L, and He K. 43P MRTX-500: Phase II trial of sitravatinib (sitra) + nivolumab (nivo) in patients (pts) with non-squamous (NSQ) non-small cell lung cancer (NSCLC) progressing on or after prior checkpoint inhibitor (CPI) therapy. *Ann Oncol* 2022; 33:S19-S20. PMID: Not assigned. Full Text

Background: Therapy with CPI has improved OS in a subset of pts with NSCLC. Mechanisms of CPI resistance, however, have been described, including an immunosuppressive tumor microenvironment (TME), which may recruit immunosuppressive myeloid-derived suppressor cells (MDSCs), regulatory T cells (Tregs), and M2-polarized macrophages in the TME. Sitra, a spectrum-selective TKI targeting TAM (Tyro3/Axl/MerTK) receptors and VEGFR2, reduces the number of MDSCs and Tregs and increases the M1/M2-polarized macrophage ratio. It is hypothesized to overcome an immunosuppressive TME and augment antitumor immune responses. Methods: MRTX-500 (NCT02954991) is a phase II study evaluating sitra (120 mg QD) + nivo (Q2W or Q4W) in pts with NSQ NSCLC who have progressed on or after treatment, with a CPI-based regimen (anti-PD1/PD-L1) and/or platinum doublet chemotherapy. The primary endpoint is ORR per RECIST 1.1. Secondary endpoints include OS, PFS, and safety. We report updated efficacy data for pts with NSCLC with PCB (prior clinical benefit; CR, PR, or SD ≥12 weeks) from a CPI who were treated with sitra + nivo as either 2L or 3L therapy. Results: As of 17 October 2020, 68 pts with PCB (57% female; median age, 66 years; ECOG PS 0/1/2, 27%/66%/7%) were treated. Median

follow-up was 28 months, median OS was 15 months (95% CI 9.3, 21.1),1- and 2-year OS rates were 56% and 32%, respectively. Median PFS was 6 months, and ORR was 16% (11/68), including 2 CRs. Median duration of response was 13 months. In all CPI-experienced pts evaluable for safety (n=124), treatment related adverse events (TRAEs) occurred in 91% of pts, with Gr 3/4 TRAEs occurring in 60% of pts. The most common (≥10%) Gr 3/4 TRAEs were hypertension and diarrhea. There were no Gr 5 TRAEs. Discontinuation rates for sitra and nivo due to any AE were 30% and 27%, respectively. Conclusions: Sitra + nivo demonstrated antitumor activity and encouraging OS compared to historical controls and no new safety signals were observed in pts with NSQ NSCLC who progressed on prior CPI. This combination is being evaluated in the phase III SAPPHIRE study. Previously presented at ESMO 2021, FPN (Final Publication Number): 1191O, Ticiana Leal et al. - Reused with permission. Clinical trial identification: NCT02954991.

Hospital Medicine

Gupta K, **Pate M**, **Kakar TS**, **Di Carli MF**, **Ananthasubramaniam K**, **Prabhu SD**, and **Bajaj NS**. NON-INVASIVE ASSESSMENT OF MYOCARDIAL ENERGETICS USING 11-C ACETATE POSITRON EMISSION TOMOGRAPHY: SYSTEMATIC REVIEW AND META-ANALYSIS. *J Am Coll Cardiol* 2022; 79(9):1321. PMID: Not assigned. Full Text

Background 11-C acetate PET is a non-invasive imaging modality to assess myocardial oxygen consumption (MVO2), and external efficiency (MEE). We conducted a systematic review and meta-analysis of available literature on this topic. Methods We searched electronic databases from inception to September 15, 2021, for all studies using 11C-Acetate PET in humans and patients with CVD at rest. Data are presented as mean with 95% CI. Results 54 studies with 1,182 participants (337 healthy, 845 patients with any CVD) met our inclusion criteria. Mean MVO2 and MEE in studies with healthy controls was 0.11 (0.09, 0.13, I2=99.3%) ml min-1g-1 and 27% (22, 33 I2=98.3%), respectively (Figure). Mean MEE in HFrEF, HFpEF, AS and HCM was 15% (13, 18), 13% (12, 14), 23% (20, 25) and 19% (CI 17, 22), respectively. In HFrEF, both mean MVO2 (difference -0.02,-0.03, -0.01) and MEE (difference -9%, [-13, -6]) were lower vs. healthy controls. In HFpEF, mean MVO2 was higher (difference 0.03, -0.01, 0.07), but mean MEE was similar. In aortic stenosis, mean MVO2 was higher (difference 0.03, [0.01, 0.05]) and mean MEE lower (difference -7%, [-16, 1]) vs. healthy controls. In HCM, mean MVO2 was higher (WMD 0.01, [0.00, 0.02]), and mean MEE was lower (difference -21%, [-33, -8]). Conclusion Assessment of myocardial energetics using 11-C acetate PET can help understand the pathophysiology of distinct CVD. There is significant heterogeneity in the current literature, and there is an unmet need to standardize protocols and reporting methods. [Formula presented]

Internal Medicine

Devgun J, **Abdelrahim E**, **Ahmed F**, **Kazem A**, **Singh-Kucukarslan G**, **Nemeh H**, and **Maskoun W**. TRICUSPID VALVE DISEASE AND RIGHT VENTRICULAR DYSFUNCTION AFTER RIGHT VENTRICULAR TRANSVENOUS LEAD PLACEMENT IN PATIENTS WITH TRICUSPID VALVE PROSTHESIS. *J Am Coll Cardiol* 2022; 79(9):1694. PMID: Not assigned. Full Text

Background First time transvenous right ventricular (RV) lead implant after tricuspid valve (TV) repair or bioprosthetic replacement is common. We evaluated outcomes in TV regurgitation (TR) and RV function in this population. Methods We conducted single-center retrospective study on patients with TV repair or replacement from 2000 to 2020 followed by first-time transvenous RV lead implant. Primary outcomes were change in TR severity (defined as defined as none/trivial, mild, moderate, moderate-severe, or severe) and RV function (normal, mild, moderate, or severe). Baseline and follow-up echocardiogram (ECHO) data was reviewed, as well as time to death. Results 52 patients were identified (29 female, 47 had hypertension, 41 had atrial fibrillation, 49 had TV repair, 3 had replacement). Median time from surgery to implant was 1.7 months and to last ECHO was 39.7 months. In TV repair, baseline TR was none/trivial in 15 (30.6%) and mild in 21 (42.8%) patients. RV function was normal in 33 (67.3%) patients. 58% had worsened TR (mean 0.9 levels) (Figure). No TR change was seen in TV replacement. Mean worsening RV function was by 0.9 levels. There was statistically significant correlation with RV pacing and RV dysfunction (Spearman correlation coefficient 0.37, p = 0.017), but not with change in TR (p = 0.36). 22 patients died at median follow-up (48.9 months). Conclusion Presence of an RV lead after TV repair

correlated with worsening TR. Higher RV pacing level correlated with RV dysfunction but not TR severity. [Formula presented]

Internal Medicine

Gelovani D, **Mahmood S**, **Wang DD**, **Frisoli TM**, **Lee JC**, **Villablanca PA**, **Chiang M**, **Engel-Gonzales P**, **Wyman JF**, **O'Neill B**, **O'Neill WW**, and **Eng MH**. INITIAL EXPERIENCE WITH LITHOTRIPSY FOR MITRAL BALLOON VALVULOPLASTY. *J Am Coll Cardiol* 2022; 79(9):577. PMID: Not assigned. Full Text

Background: Mitral annular calcification (MAC) causes degeneration of the mitral valve function. Since these patients are poor surgical candidates, options are limited to percutaneous solutions. Use of balloon lithotripsy (BL) to augment mitral balloon valvuloplasty (MBV) is a novel technique for treatment of MAC-related mitral stenosis (MS). Methods: Single-center retrospective review of 35 consecutive MBV for MAC cases at Henry Ford from 3/2013 to 4/2021. Outcome variables are reported as median and interquartile ranges (IQR). Chi-squared and Wilcoxon-signed rank tests were used to compare categorical and continuous variables respectively using 95% confidence intervals for statistical significance. Procedural success was defined as a final mitral valve area ≥1.5 cm2 or ≥50% reduction in gradient. Results: Of 35 MBV cases done for MAC, 5 utilized lithotripsy balloons to augment valvuloplasty results (Table). Mean baseline gradients were similar and right ventricular systolic pressures trended higher for BL cases. Cases utilizing lithotripsy were longer and utilized more fluoroscopy time but the final invasive gradient trended lower (non-BL 7mmHg [4, 9] vs. BL 1 mmHg [0,5] p=0.113), therefore, higher rates of procedural success were seen (non-BL 47% vs. BL 80%, p=0.2). Survival analysis was hampered due to loss of follow-up in the BL group. Conclusion: BL appears to augment immediate valvuloplasty results. Further studies regarding the durable impact of balloon lithotripsy on MBV are warranted. [Formula presented]

Internal Medicine

Ghandour AH, **Gupta K**, **Do AP**, **Alqarqaz M**, and **Zweig B**. DOUBLE-TROUBLE: TAKOTSUBO AND ACUTE CORONARY SYNDROME IN A YOUNG WOMAN. *J Am Coll Cardiol* 2022; 79(9):2572. PMID: Not assigned. Full Text

Background: The original case series of patients with Takotsubo Syndrome (TTS) reported no significant epicardial coronary artery disease during angiography. However, recent evidence suggests an increasing overlap between the two diseases. We report a case of a 48-year old woman who had untreated generalized anxiety disorder and presented with angina. Case: A 48-year old woman with untreated general anxiety disorder presented with a 5 hour history of angina. An electrocardiogram demonstrated a prolonged QTc, no ST segment changes and new T-wave inversions in the anterolateral leads. High-sensitivity troponin was 4,336 ng/L and her InterTAK score was 91 with a 99.6% probability of TTS. Decision-making: Due to her persistent chest pain and EKG changes the patient underwent emergent left heart catheterization which showed critical occlusion of the 1st diagonal and 71% stenosis of the distal left circumflex. She underwent a primary PCI of both lesions. Her chest pain resolved after 6 hours of a nitrolgycerin infusion postoperatively and a transthoracic echocardiogram showed hypokinesis of the mid-distal apical, periapical, septal, lateral, inferior and anterior wall with an ejection fraction of 30-35%. The distribution of hypokinesia was out of proportion to the territory supplied by the culprit artery, suggesting a possibility of the apical type of Takotsubo syndrome. She was started on guideline-directed medical therapy for heart failure with reduced ejection fraction and dual antiplatelet therapy Conclusion: Patients with TTS may have coexistent significant epicardial CAD. Prolonged QTc and lack of ST-segment elevation in patients with CAD may help identify an additional diagnosis of TTS.

Internal Medicine

Gupta K, **Pate M**, **Kakar TS**, **Di Carli MF**, **Ananthasubramaniam K**, **Prabhu SD**, and **Bajaj NS**. NON-INVASIVE ASSESSMENT OF MYOCARDIAL ENERGETICS USING 11-C ACETATE POSITRON EMISSION TOMOGRAPHY: SYSTEMATIC REVIEW AND META-ANALYSIS. *J Am Coll Cardiol* 2022; 79(9):1321. PMID: Not assigned. Full Text

Background 11-C acetate PET is a non-invasive imaging modality to assess myocardial oxygen consumption (MVO2), and external efficiency (MEE). We conducted a systematic review and meta-

analysis of available literature on this topic. Methods We searched electronic databases from inception to September 15, 2021, for all studies using 11C-Acetate PET in humans and patients with CVD at rest. Data are presented as mean with 95% CI. Results 54 studies with 1,182 participants (337 healthy, 845 patients with any CVD) met our inclusion criteria. Mean MVO2 and MEE in studies with healthy controls was 0.11 (0.09, 0.13, I2=99.3%) ml min-1g-1 and 27% (22, 33 I2=98.3%), respectively (Figure). Mean MEE in HFrEF, HFpEF, AS and HCM was 15% (13, 18), 13% (12, 14), 23% (20, 25) and 19% (CI 17, 22), respectively. In HFrEF, both mean MVO2 (difference -0.02,-0.03, -0.01) and MEE (difference -9%, [-13, -6]) were lower vs. healthy controls. In HFpEF, mean MVO2 was higher (difference 0.03, -0.01, 0.07), but mean MEE was similar. In aortic stenosis, mean MVO2 was higher (difference 0.03, [0.01, 0.05]) and mean MEE lower (difference -7%, [-16, 1]) vs. healthy controls. In HCM, mean MVO2 was higher (WMD 0.01, [0.00, 0.02]), and mean MEE was lower (difference -21%, [-33, -8]). Conclusion Assessment of myocardial energetics using 11-C acetate PET can help understand the pathophysiology of distinct CVD. There is significant heterogeneity in the current literature, and there is an unmet need to standardize protocols and reporting methods. [Formula presented]

Internal Medicine

Kazem A, **Al-Darzi W**, **Gorgis S**, **Sadiq O**, and **Parikh S**. LEFT ATRIAL COMPRESSION FROM ACHALASIA - THE DIAGNOSTIC POWER OF ECHOCARDIOGRAM. *J Am Coll Cardiol* 2022; 79(9):3027. PMID: Not assigned. Full Text

Background: Left atrial compression by an extracardiac mass can arise from multiple structures surrounding the heart. Differentials include hiatal hernias, mediastinal masses, dissecting aortic aneurysms, esophageal malignancies, and rarely esophageal abnormalities such as achalasia. We present a case of a patient who during a routine transthoracic echocardiogram (TTE) was found to have left atrial compression secondary to achalasia, determined using appropriate maneuvers during image acquisition. Case: A 69-year-old female with diabetes underwent a TTE as part of workup for labile, uncontrolled blood pressure. Simultaneously, she was also being worked up for symptoms of dysphagia, weight loss and chronic cough. TTE revealed a 3.3 x 5 cm heterogeneous extracardiac mass compressing the left atrium. Decision-making: To determine the source of the mass, she was given a carbonated beverage to drink during the imaging acquisition, which was seen within the mass with a change in echo density, confirming GI origin. Imaging with CT scan revealed a dilated esophagus, and furthermore, EGD and esophageal manometry confirmed a diagnosis of achalasia. Conclusion: Echocardiographic imaging, with appropriate maneuvers, can be effective in identifying masses of gastrointestinal origin, differentiating them from vascular or mediastinal origin. Echocardiography has shown to be a strong, non-invasive tool to not only diagnose cardiac diseases, but also extracardiac manifestations of various organ systems. [Formula presented]

Internal Medicine

Kazem A, **Mohammed M**, **Chiang M**, **Gonzales PE**, **Frisoli TM**, **Villablanca PA**, **Lee JC**, **Wang DD**, **Wyman JF**, **O'Neill B**, **O'Neill WW**, and **Eng MH**. SAFETY AND FEASIBILITY OF TRANSCAVAL APPROACH FOR TRANSCATHETER AORTIC VALVE REPLACEMENTS. *J Am Coll Cardiol* 2022; 79(9):657. PMID: Not assigned. Full Text

Background: Alternative access is used in a minority of transcatheter aortic valve replacement (TAVR) cases and include transcarotid, transaxillary, transthoracic and transcaval access. Transcaval data has been limited and not performed with contemporary valve platforms. We present single center transcaval cases done with low profile TAVR platforms. Methods: This single center retrospective study analyzed 127 consecutive patients undergoing transcaval TAVR between September 2015 and April 2020. Demographic, clinical & procedural outcome variables were reported as interquartile ranges and the data was analyzed using SPSS v28. Kaplan Meier method was used to estimate survival. Results: Within the cohort of 127 patients, 48.8% were male. The average age was 77.3 years [70.7-84.7]. Mean baseline aortic gradient was 35.5 mmHg [24.9-46]. TAVR was successful in all patients and 97.6% survived to hospital discharge. The rate of VARC-3 major bleeding was 22% with 3.9% developing major vascular complications. Covered stent implantation occurred in 7.9% of patients. No annular dissection or cardiac perforation was encountered. Median follow up time was 1.2 years [0.6, 2.5] with a mean survival of 3.8 years [3.2-4.3] (Figure 1). Conclusion: TAVR from transcaval access demonstrated a long mean survival

time in successful cases. There was a low rate of VARC-3 major vascular complications despite elevated major bleeding rates. Prospective comparative studies in alternative access are warranted. [Formula presented]

Internal Medicine

Mahmood S, **Almajed M**, **Nona P**, and **Villablanca PA**. NEUROLOGIC COMPLICATIONS OF TRANSAXILLARY ACCESS IN TAVR - A CASE OF POSTPROCEDURAL ULNAR AND MEDIAN NERVE INJURY. *J Am Coll Cardiol* 2022; 79(9):2952. PMID: Not assigned. Full Text

Background: Peripheral nerve injuries secondary to endovascular procedures are relatively rare but cause significant functional impairment. With transaortic valve replacement (TAVR), these injuries more commonly occur during axillary access compared to femoral and radial access (due to its proximity to brachial plexus). While hematoma and pseudoaneurysm formation are the more common complications, nerve injury may occur secondary to compression or direct needle puncture. Case: A 76-year-old male with severe aortic stenosis underwent two failed TAVR attempts due to poor access. Initial attempts at femoral access and transcaval access were aborted due to existing abdominal aortic endograft. Further attempts via carotid access were aborted due to stenosis. An attempt at left axillary access was then performed and TAVR was successful. Postoperatively (day 0), the patient developed left upper extremity (LUE) numbness over the 4th and 5th digits, medial palm, and dorsum of the hand with weakness when holding objects. Our neurological evaluation identified a total ulnar nerve (UN) and partial median nerve (MN) injury. Decision-making: Transaxillary access for TAVR is a disfavored approach due to the better outcomes when performed with other access sites. After out identification of a postprocedural nerve injury, we ordered a LUE arterial duplex ultrasound (US) and CT angiogram which excluded hematoma or pseudoaneurysm formation. US of the left brachial plexus revealed questionable edematous change at the take-off of the left UN and MN. Patient's symptoms did not improve postoperatively until his discharge from the hospital (day 3) and an outpatient nerve conduction study was scheduled. Conclusion: We report a rare case of proximal UN and MN injury in a patient who underwent transaxillary TAVR due to the lack of alternative access. Prompt evaluation to rule-out vascular mechanism of injury in this patient was critical as early intervention results reduce further morbidity. With symptoms of motor and sensory brachial plexopathy and concerning imaging findings, the patient was scheduled for outpatient follow-up.

Internal Medicine

Mahmood S, **Gelovani D**, **Gupta K**, **Chiang M**, **Engel-Gonzales P**, **Frisoli TM**, **Villablanca PA**, **Lee JC**, **Wang DD**, **Wyman JF**, **O'Neill B**, **O'Neill W**, and **Eng MH**. SURVIVAL OF PATIENTS WITH RHEUMATIC AND NON-RHEUMATIC MITRAL VALVE STENOSIS AFTER VALVULOPLASTY. *J Am Coll Cardiol* 2022; 79(9):880. PMID: Not assigned. Full Text

Background: Non-rheumatic (NR) mitral stenosis (MS) due to mitral annular calcification (MAC) presents in elderly patients and is difficult to treat due elevated surgical risk. In search for alternative treatments, mitral balloon valvuloplasty (MBV) has been performed in non-rheumatic mitral stenosis but no outcomes have been described in this cohort. Methods: Single center retrospective review of 85 consecutive MBV cases at Henry Ford from 3/2013 to 4/2021. Clinical and procedural outcome variables are reported as median and interquartile ranges (IQR). Kaplan-Meier method was used to estimate survival. Chi-squared and Wilcoxon-signed rank tests were used to compare categorical and continuous variables respectively using 95% confidence intervals for statistical significance. Results: Of 85 MBV cases, 50 and 35 were performed for rheumatic (R) and NR MS respectively. NR patients tended to be older and were more likely to have hypertension, diabetes, coronary artery disease, chronic kidney disease, aortic valve procedures. Rates of ≥moderate-severe mitral regurgitation (MR) (R 18% vs. NR 12% p=0.4) and procedure success (R 57% vs NR 42.9% p=0.2) were similar. Median follow up for the entire cohort was 0.5 yrs [0.1, 2.1]. Survival was significantly better for rheumatic cases (Figure). Conclusion: Survival of NR MS post-valvuloplasty is significantly attenuated as compared to those with R MS. Larger prospective studies are necessary in understanding optimal bridging therapies for patients with MAC. [Formula presented]

Internal Medicine

McCord JK, **Cook B**, **Gandolfo C**, **Parikh S**, **Klausner H**, **Abdul-Nour K**, **Lewandowski A**, **Hudson MP**, **Perrotta GS**, **Zweig B**, **Gunaga S**, **Lanfear DE**, **Gindi R**, Levy PD, Mills NL, Mahler S, **Kim HE**, Danagoulian S, **Tang A**, **Nassereddine H**, **Oudeif A**, **Malette K**, **Krupp S**, Keerie C, and **Miller J**. RACE-IT- RAPID MYOCARDIAL INFARCTION EXCLUSION USING AN ACCELERATED HIGH-SENSITIVITY CARDIAC TROPONIN I PROTOCOL: A PROSPECTIVE TRIAL. *J Am Coll Cardiol* 2022; 79(9):951. PMID: Not assigned. Full Text

Background We compared the safety of our standard protocol to a new 0/1-hour high-sensitivity cardiac troponin I (hs-cTnI) protocol for exclusion of myocardial infarction (MI). Methods A stepped-wedge randomized trial of patients evaluated for possible MI in 9 Emergency Departments (ED) (urban and suburban) in the Henry Ford Health System (Detroit, MI) were studied from 7/2020-3/2021. Trial arms included the new 0/1-hour protocol and standard care. A hs-cTnI assay from Beckman Coulter was used (99th percentile 18 ng/L). Patients were excluded if any hs-cTnI was >18 ng/L within 3 hours or they were admitted to the hospital. In the 0/1-hour algorithm, MI was excluded if hs-cTnI <4 ng/L at time 0, or = 4 ng/L at time 0 with 1 hour <8 ng/L. The algorithm advised ED discharge if patients ruled-out by the 0/1-hour protocol. Otherwise, the protocol included another hs-cTnI at 3 hours. In the standard care arm, hs-cTnI was measured at 0 and 3 hours with values ≤18 ng/L used to exclude AMI and guide ED discharge decisions. The primary outcome was adjudicated death or MI at 30 days. The analysis included a mixed effect model adjusting for ED site, time, sex, age, and race. Results There were 22,345 patients in the trial. At 30 days there were 24 deaths and 26 MIs. There was no significant difference between the death/MI rate between the standard of care group and the accelerated protocol (Table). Conclusion Implementation of the 0/1-hour algorithm to evaluate for MI in the ED was safe when compared to standard care. [Formula presented]

Neurology

Mahmood S, **Almajed M**, **Nona P**, and **Villablanca PA**. NEUROLOGIC COMPLICATIONS OF TRANSAXILLARY ACCESS IN TAVR - A CASE OF POSTPROCEDURAL ULNAR AND MEDIAN NERVE INJURY. *J Am Coll Cardiol* 2022; 79(9):2952. PMID: Not assigned. Full Text

Background: Peripheral nerve injuries secondary to endovascular procedures are relatively rare but cause significant functional impairment. With transaortic valve replacement (TAVR), these injuries more commonly occur during axillary access compared to femoral and radial access (due to its proximity to brachial plexus). While hematoma and pseudoaneurysm formation are the more common complications, nerve injury may occur secondary to compression or direct needle puncture. Case: A 76-year-old male with severe aortic stenosis underwent two failed TAVR attempts due to poor access. Initial attempts at femoral access and transcaval access were aborted due to existing abdominal aortic endograft. Further attempts via carotid access were aborted due to stenosis. An attempt at left axillary access was then performed and TAVR was successful. Postoperatively (day 0), the patient developed left upper extremity (LUE) numbness over the 4th and 5th digits, medial palm, and dorsum of the hand with weakness when holding objects. Our neurological evaluation identified a total ulnar nerve (UN) and partial median nerve (MN) injury. Decision-making: Transaxillary access for TAVR is a disfavored approach due to the better outcomes when performed with other access sites. After out identification of a postprocedural nerve injury, we ordered a LUE arterial duplex ultrasound (US) and CT angiogram which excluded hematoma or pseudoaneurysm formation. US of the left brachial plexus revealed questionable edematous change at the take-off of the left UN and MN. Patient's symptoms did not improve postoperatively until his discharge from the hospital (day 3) and an outpatient nerve conduction study was scheduled. Conclusion: We report a rare case of proximal UN and MN injury in a patient who underwent transaxillary TAVR due to the lack of alternative access. Prompt evaluation to rule-out vascular mechanism of injury in this patient was critical as early intervention results reduce further morbidity. With symptoms of motor and sensory brachial plexopathy and concerning imaging findings, the patient was scheduled for outpatient follow-up.

Neurology

Mahmood S, **Gelovani D**, **Gupta K**, **Chiang M**, **Engel-Gonzales P**, **Frisoli TM**, **Villablanca PA**, **Lee JC**, **Wang DD**, **Wyman JF**, **O'Neill B**, **O'Neill W**, and **Eng MH**. SURVIVAL OF PATIENTS WITH

RHEUMATIC AND NON-RHEUMATIC MITRAL VALVE STENOSIS AFTER VALVULOPLASTY. *J Am Coll Cardiol* 2022; 79(9):880. PMID: Not assigned. Full Text

Background: Non-rheumatic (NR) mitral stenosis (MS) due to mitral annular calcification (MAC) presents in elderly patients and is difficult to treat due elevated surgical risk. In search for alternative treatments, mitral balloon valvuloplasty (MBV) has been performed in non-rheumatic mitral stenosis but no outcomes have been described in this cohort. Methods: Single center retrospective review of 85 consecutive MBV cases at Henry Ford from 3/2013 to 4/2021. Clinical and procedural outcome variables are reported as median and interquartile ranges (IQR). Kaplan-Meier method was used to estimate survival. Chi-squared and Wilcoxon-signed rank tests were used to compare categorical and continuous variables respectively using 95% confidence intervals for statistical significance. Results: Of 85 MBV cases, 50 and 35 were performed for rheumatic (R) and NR MS respectively. NR patients tended to be older and were more likely to have hypertension, diabetes, coronary artery disease, chronic kidney disease, aortic valve procedures. Rates of ≥moderate-severe mitral regurgitation (MR) (R 18% vs. NR 12% p=0.4) and procedure success (R 57% vs NR 42.9% p=0.2) were similar. Median follow up for the entire cohort was 0.5 yrs [0.1, 2.1]. Survival was significantly better for rheumatic cases (Figure). Conclusion: Survival of NR MS post-valvuloplasty is significantly attenuated as compared to those with R MS. Larger prospective studies are necessary in understanding optimal bridging therapies for patients with MAC. [Formula presented]

Obstetrics, Gynecology and Women's Health Services

Ayyash M, Daviskiba S, **Yaquinto A**, **Roberson J**, and **Pitts DA**. eP446: High rates of 'atypical' panorama noninvasive prenatal screening results among consanguineous Arab American women. *Genet Med* 2022; 24(3):S279-S280. PMID: Not assigned. Full Text

Introduction: Panorama is one of the most accurate and commonly used methods of cell free DNA noninvasive prenatal screening (NIPS). The results are reported as either high risk for a specific aneuploidy, high risk due to fetal fraction, insufficient fetal DNA, atypical, high risk, or no results. It is the only form of NIPS that uses a single nucleotide polymorphism (SNP) method, representing genetic changes that are present in over 1% of the general population, to screen for common fetal aneuploidies and microdeletion syndromes. We hypothesize that the SNP method could be leading to the increase in atypical results among women in consanguineous relationships, common amongst Arab Americans, where there is high homogeneity of genetic material. The aim of this study is to explore factors influencing atypical Panorama NIPS results and its association with abnormal fetal outcomes amongst Arab American women. Methods: A retrospective cohort study was performed by looking at Panorama NIPS performed between September 2018 and January 2021 at a large urban health system in Detroit, Michigan. The records were obtained from Natera, Inc, the clinical genetic testing company for Panorama. Singleton gestations who underwent Panorama screening and had 'atypical' results were included. The outcome of interest was fetal anomalies or abnormal genetic outcomes. Results: A total of 5,886 women underwent Panorama NIPS within the defined time frame and 772 (13.1%) were identified as Arab Americans. Forty-nine (0.79%) women had atypical results, of which 43 were singleton gestations. The mean age was 29.6 ± 5.3 years old. Nineteen women (44.2%) were White, 14 (32.6%) were Arab and 8 (18.6%) were Black. The percentage of Arab American women with atypical results (32.6%) was significantly higher than the overall percentage of Arab American women who ever underwent Panorama testing (13.0%) (p=0.00018). Eight women were in a known consanguineous relationship, all of whom identified as Arab Americans, hence making 57.1% of Arab women with atypical results. The outcomes for all 43 pregnancies showed normal fetal anatomy and no genetic abnormalities. In those who underwent further testing with amniocentesis (14.0%) or MaterniT21 (14.0%), the results were all normal. Conclusion: We identified a high percentage of Arab American women with atypical results compared to the baseline Arab American women ratio in the population screened. More importantly, we identified a high rate of consanguinity amongst Arab women with atypical results and subsequent normal fetal anatomy suggesting the possible influence of consanguinity on falsely elevated atypical results due to the SNP method used with Panorama testing. Such knowledge might suggest that, for Arab American women, particularly consanguineous couples, Panorama testing may not be the most ideal method for NIPS. This could help reduce unnecessary invasive testing and Maternal Fetal Medicine and genetics consultations.

Obstetrics, Gynecology and Women's Health Services

Megahed N, Pai S, Robison E, **Briskin R**, Menhaji K, Spector S, Hidalgo R, and Antosh D. Racial and ethnic disparities in pelvic floor disorder awareness. *Am J Obstet Gynecol* 2022; 226(3):S1299-S1300. PMID: Not assigned. Full Text

Objectives: Pelvic floor disorders (PFD) affect the quality of life for many women and can be a significant cause of distress. With the United States' aging population, PFD are becoming increasingly prevalent. Previous population based studies identified both differences in prevalence and baseline knowledge of PFD by race and ethnicity. These prior studies assessing PFD knowledge were limited to single geographical areas or institutions. We aim to conduct a multicenter study across the United States to better understand the baseline knowledge and perceptions of PFD and its variance across different races and ethnicities. Our goal is to provide data that will help deliver culturally competent information to patients. Materials and Methods: This was a multicenter cross-sectional study involving six sites. Upon initial presentation to a urogynecology clinic, patients were evaluated with the Prolapse and Incontinence Knowledge Questionnaire along with additional questions aimed to assess differences in PFD descriptive language, barriers to care, and attitude towards PFD. Surveys were distributed at participating institutions from October 2019 to February 2021. Statistical analyses were performed with Fisher's exact test and Chi-square test, using $p < 0.05$ for statistical significance. Results: A total of 287 women completed the survey, with 27 excluded due to omission of race and or ethnicity responses. Respondents identified their ethnicity as Hispanic (21.8%) and race as White (70.5%), African American (AA) (19.2%), and Other Women of Color (OWOC) (10.3%). Overall, the mean percent correct for the urinary incontinence (UI) and pelvic organ prolapse (POP) sub-scores were 61.2 ± 28.2 and 60.5 ± 28.2, respectively. AA and OWOC had lower scores compared to White respondents in both UI (AA 60.7 ± 30.1; OWOC 46.8 ± 31.2; W 63.5 ± 26.5; $p = 0.018$) and POP (AA 55.5 ±30.1; OWOC 48.9 ± 31.0; W 64 ± 26.2; $p = 0.011$). Hispanic women scored lower in both UI (43.9 ± 29.8 vs 66.5 ± 25.3, $p < 0.001$) and POP (46.2 ± 28.4 vs 66.5 ± 25.3, $p<0.001$) when compared to non-Hispanic respondents. AA and OWOC had decreased knowledge of POP language compared to White respondents (32.3 ± 30.8 % correct vs 35.4 ± 33.6 % correct vs 50.4 ± 32.9 % correct, $p < 0.001$). This was similar for Hispanic compared to non-Hispanic respondents (33.3 ± 31.2 % correct vs 40.1 ± 32.5 % correct, $p<0.001$). Responses to UI and POP misconception questions were not different by race or ethnicity. Conclusion: This is the first multicenter, cross-sectional survey of a diverse patient population assessing knowledge and perception of PFD. We observed differences between baseline knowledge and language proficiency of PFD amongst AA, White, and OWOC, as well as between Hispanic and non-Hispanic women. This suggests the presence of racial disparities in women pursuing urogynecologic care and highlights the importance of delivering culturally sensitive information to educate women of diverse backgrounds.

Pathology and Laboratory Medicine

McCord JK, **Cook B**, **Gandolfo C**, **Parikh S**, **Klausner H**, **Abdul-Nour K**, **Lewandowski A**, **Hudson MP**, **Perrotta GS**, **Zweig B**, **Gunaga S**, **Lanfear DE**, **Gindi R**, Levy PD, Mills NL, Mahler S, **Kim HE**, Danagoulian S, **Tang A**, **Nassereddine H**, **Oudeif A**, **Malette K**, **Krupp S**, Keerie C, and **Miller J**. RACE-IT- RAPID MYOCARDIAL INFARCTION EXCLUSION USING AN ACCELERATED HIGH-SENSITIVITY CARDIAC TROPONIN I PROTOCOL: A PROSPECTIVE TRIAL. *J Am Coll Cardiol* 2022; 79(9):951. PMID: Not assigned. Full Text

Background We compared the safety of our standard protocol to a new 0/1-hour high-sensitivity cardiac troponin I (hs-cTnI) protocol for exclusion of myocardial infarction (MI). Methods A stepped-wedge randomized trial of patients evaluated for possible MI in 9 Emergency Departments (ED) (urban and suburban) in the Henry Ford Health System (Detroit, MI) were studied from 7/2020-3/2021. Trial arms included the new 0/1-hour protocol and standard care. A hs-cTnI assay from Beckman Coulter was used (99th percentile 18 ng/L). Patients were excluded if any hs-cTnI was >18 ng/L within 3 hours or they were admitted to the hospital. In the 0/1-hour algorithm, MI was excluded if hs-cTnI <4 ng/L at time 0, or = 4 ng/L at time 0 with 1 hour <8 ng/L. The algorithm advised ED discharge if patients ruled-out by the 0/1-hour protocol. Otherwise, the protocol included another hs-cTnI at 3 hours. In the standard care arm, hs-cTnI was measured at 0 and 3 hours with values ≤18 ng/L used to exclude AMI and guide ED discharge decisions. The primary outcome was adjudicated death or MI at 30 days. The analysis included a mixed

effect model adjusting for ED site, time, sex, age, and race. Results There were 22,345 patients in the trial. At 30 days there were 24 deaths and 26 MIs. There was no significant difference between the death/MI rate between the standard of care group and the accelerated protocol (Table). Conclusion Implementation of the 0/1-hour algorithm to evaluate for MI in the ED was safe when compared to standard care. [Formula presented]

Pharmacy

Dulgar K, **Lekura J**, **Pyle J**, **Kalus J**, **Agnello M**, **Loveland L**, **Lozo J**, **Abdallah N**, **Senneff T**, **Kim HE**, **Grafton G**, **Williams CT**, and **To L**. EVALUATION OF GUIDELINE DIRECTED MEDICAL THERAPY IN A PHARMACIST-LED HEART FAILURE CLINIC. *J Am Coll Cardiol* 2022; 79(9):280. PMID: Not assigned. Full Text

Background: Guideline directed medical therapy (GDMT) for the treatment of heart failure with reduced ejection fraction (HFrEF) improves morbidity and mortality. According to the CHAMP-HF registry, only 15% of patients with HFrEF achieve target dosing. Published literature reports increased achievement of GDMT by 25-40% through a multidisciplinary approach. However, the pharmacists' role on the impact of GDMT is not well described. The purpose of this study is to evaluate the impact that the CVD Ambulatory Care Pharmacy Clinic has on achievement of GDMT for patients with HFrEF. Methods: This is the interim analysis of an IRB approved retrospective cohort study. This study compares achievement of GDMT in HFrEF patients managed by the pharmacy clinic versus the control group. GDMT is defined as achievement of target dosing or maximum tolerated doses. Control group represents those not seen by CVD Pharmacy clinic. Inclusion criteria includes adult patients with EF ≤ 45%, hospitalization in the previous 12 months, followed by a cardiologist within the health system, and not on maximum tolerated doses of GDMT. The primary outcome is the number of patients on GDMT 12 months after the initial visit. Secondary outcomes include days from initial visit until GDMT, number of patients on moderate dosing of GDMT and change in EF after GDMT. Patients were enrolled from October 1, 2019 through September 30, 2020. Results: Achievement of GDMT at 12 months was 67.2% (39/58) in the intervention group compared to 16.2% (7/43) in the control (P <0.001). Days to GDMT was a median of 95.5 [57-175.5] days and 143 [64-214] days for the intervention and control group respectively (P = 0.493). In the intervention group, 50% (29/58) of patients achieved moderate dosing at 12 months compared to 11.6% (5/43) in the control group (P<0.001). Patients in the intervention group who had an echo after achieving GDMT had a median increase in EF of 12% [5-20] after GDMT achievement. For all patients who achieved GDMT, 32.6% (15/46) achieved target dosing of medications. Conclusion: The CVD Ambulatory Care Pharmacy Clinic was associated with higher rates of GDMT achievement compared to the control and a shorter time to GDMT achievement.

Public Health Sciences

Lanfear DE, **Luzum J**, **She R**, **Li J**, **Liu B**, **Peterson E**, and **Williams LK**. VALIDATION OF POLYGENIC SCORE FOR BETA-BLOCKER SURVIVAL BENEFIT IN HEART FAILURE USING THE UNITED KINGDOM BIOBANK. *J Am Coll Cardiol* 2022; 79(9):228. PMID: Not assigned. Full Text

Background: A novel polygenic response predictor (PRP) for beta blocker (BB) survival benefit in heart failure (HF) was recently described which separated European ancestry BB responders from non-responders using a score derived from 44 genetic loci. We tested whether this would replicate in the United Kingdom Biobank (UKB) dataset. Methods: UKB data pull identified patients with a HF diagnosis, genetic data and prescription data. Ejection fraction (EF) data was not available. BB exposure was quantified using BB dose and prescription frequency. The PRP was calculated using the genetic loci, weights, and cutoff value from the original description. Cox models were constructed of time to all-cause mortality adjusted for clinical risk (MAGGIC score), BB propensity score, BB exposure and BB exposure*PRP interaction. Results: Among 7502 HF patients included, 34% were women, 54% had coronary disease, 33% atrial fibrillation, 51% baseline BB usage, and 22% (n=1651) were PRP-predicted responders. Patients in the PRP responder group had strong survival benefit associated with BB exposure (HR=0.55, p=0.016), while PRP non-responders showed little BB effect (HR=0.92, p=0.466) and this difference was significant (p-interaction =0.051). Survival curves by PRP group and dichotomized BB exposure (high vs. low) are shown in the figure. Conclusion: The polygenic BB response predictor

replicated in HF patients from the UKB regardless of EF. This innovative genomic medicine tool requires testing in a clinical trial. [Formula presented]

Public Health Sciences
Lee Y, Jehangir Q, **Lin CH**, **Li P**, Krishnamoorthy G, Sule A, Apala D, Halabi AR, **Patel K**, **Wang DD**, **Poisson L**, and Nair GB. RISK FACTORS OF ARTERIAL THROMBOEMBOLISM IN HOSPITALIZED COVID-19 PATIENTS: A MULTICENTER COHORT STUDY. *J Am Coll Cardiol* 2022; 79(9):1842. PMID: Not assigned. Full Text

Background: Endothelial cell dysfunction from infection by SARS-CoV-2 and inflammatory cytokines leading to hyperinflammatory and hypercoagulable state is thought to be the mechanism of arterial thromboembolism (ATE) in COVID-19 patients. COVID-19 infection is known to be an independent risk factor for acute stroke and myocardial infarction (MI). However, data on the risk factors of ATE in hospitalized COVID-19 patients is limited. Methods: This retrospective, multicenter cohort study included adult patients admitted to one quaternary care and three community hospitals with PCR-proven SARS-CoV-2 infection between 3/1/2020 and 12/31/2020. The composite outcome was in-hospital ATE events, including acute ischemic stroke, MI, and other ATE identified by ICD-10 codes. Student t-test was conducted for continuous variables and the Chi-square test for categorical variables. Multivariate logistic regression using forward selection was conducted. All statistical tests were 2-sided with an α level of 0.05. All data was analyzed using R version 4.0.4. Results: The cohort included 3531 patients with 371 (10.5%) patients who developed acute ATE. There were 398 ATE events: 270 patients had MI, 43 had stroke, 85 had other ATE, 12 had MI + stroke, 13 had MI + other ATE, and 2 had stroke + other ATE. The model suggested that initial systolic blood pressure (BP) <90 mmHg and >160 mmHg; elevated initial biomarkers including B-type natriuretic peptide (>100 pg/mL), troponin-I (>0.03 ng/mL), lactate dehydrogenase (>192 U/L), creatine phosphokinase (male >280 U/L and female >155 U/L), C-reactive protein (>0.5 mg/dL), leukocytes (>11 K/uL), lactate (>2.2 mmol/L), and aspartate aminotransferase (>41 U/L); presenting hypoalbuminemia (<3.5 g/dL) and hypomagnesemia (<1.8 mg/dL); age >60; male sex; and history of cerebrovascular accident (CVA), coronary artery disease (CAD), hyperthyroidism, and cigarette smoking were associated with an increased risk of ATE (all $p<0.05$). Conclusion: Hypo or hypertension on admission, elevated inflammatory and cardiac markers, hypoalbuminemia, hypomagnesemia, smoking, and comorbidities including CAD and CVA are associated with ATE in hospitalized COVID-19 patients.

Public Health Sciences
McCord JK, **Cook B**, **Gandolfo C**, **Parikh S**, **Klausner H**, **Abdul-Nour K**, **Lewandowski A**, **Hudson MP**, **Perrotta GS**, **Zweig B**, **Gunaga S**, **Lanfear DE**, **Gindi R**, Levy PD, Mills NL, Mahler S, **Kim HE**, Danagoulian S, **Tang A**, **Nassereddine H**, **Oudeif A**, **Malette K**, **Krupp S**, Keerie C, and **Miller J**. RACE-IT- RAPID MYOCARDIAL INFARCTION EXCLUSION USING AN ACCELERATED HIGH-SENSITIVITY CARDIAC TROPONIN I PROTOCOL: A PROSPECTIVE TRIAL. *J Am Coll Cardiol* 2022; 79(9):951. PMID: Not assigned. Full Text

Background We compared the safety of our standard protocol to a new 0/1-hour high-sensitivity cardiac troponin I (hs-cTnI) protocol for exclusion of myocardial infarction (MI). Methods A stepped-wedge randomized trial of patients evaluated for possible MI in 9 Emergency Departments (ED) (urban and suburban) in the Henry Ford Health System (Detroit, MI) were studied from 7/2020-3/2021. Trial arms included the new 0/1-hour protocol and standard care. A hs-cTnI assay from Beckman Coulter was used (99th percentile 18 ng/L). Patients were excluded if any hs-cTnI was >18 ng/L within 3 hours or they were admitted to the hospital. In the 0/1-hour algorithm, MI was excluded if hs-cTnI <4 ng/L at time 0, or = 4 ng/L at time 0 with 1 hour <8 ng/L. The algorithm advised ED discharge if patients ruled-out by the 0/1-hour protocol. Otherwise, the protocol included another hs-cTnI at 3 hours. In the standard care arm, hs-cTnI was measured at 0 and 3 hours with values ≤18 ng/L used to exclude AMI and guide ED discharge decisions. The primary outcome was adjudicated death or MI at 30 days. The analysis included a mixed effect model adjusting for ED site, time, sex, age, and race. Results There were 22,345 patients in the trial. At 30 days there were 24 deaths and 26 MIs. There was no significant difference between the death/MI rate between the standard of care group and the accelerated protocol (Table). Conclusion

Implementation of the 0/1-hour algorithm to evaluate for MI in the ED was safe when compared to standard care. [Formula presented]

Public Health Sciences

Wise LA, Wesselink AK, Willis M, **Wegienka GR**, Marsh EE, Mikkelsen EM, Hatch EE, and Lambert-Messerlian GM. Perfluoroalkyl and Polyfluoroalkyl Substances and AMH Concentrations in Two Preconception Cohort Studies. *Reprod Sci* 2022; 29(SUPPL 1):88-88. PMID: Not assigned. Request Abstract

Pulmonary and Critical Care Medicine

Chupp G, Kline JN, Khatri SB, McEvoy C, Silvestri GA, Shifren A, Castro M, Bansal S, McClelland M, Dransfield M, Trevor J, Kahlstrom N, **Simoff M**, Wahidi MM, Lamb CR, Ferguson JS, Haas A, Hogarth DK, Tejedor R, Toth J, Hey J, Majid A, LaCamera P, Fitzgerald JM, Enfield K, Grubb GM, McMullen EA, Olson JL, and Laviolette M. Bronchial Thermoplasty in Patients With Severe Asthma at 5 Years: The Post-FDA Approval Clinical Trial Evaluating Bronchial Thermoplasty in Severe Persistent Asthma Study. *Chest* 2022; 161(3):614-628. PMID: Not assigned. Full Text

G. Chupp, Yale University, CT, New Haven

Background: Bronchial thermoplasty is a device-based treatment for subjects ≥ 18 years of age with severe asthma poorly controlled with inhaled corticosteroids and long-acting beta-agonists. The Post-FDA Approval Clinical Trial Evaluating Bronchial Thermoplasty in Severe Persistent Asthma (PAS2) study collected data on patients with severe asthma undergoing this procedure. Research Question: What are the 5-year efficacy and safety results in patients with severe asthma who have undergone bronchial thermoplasty? Study Design and Methods: This was a prospective, open-label, observational, multicenter study conducted in the United States and Canada. Subjects 18 to 65 years of age who were taking inhaled corticosteroids ≥ 1,000 μg/d (beclomethasone or equivalent) and long-acting beta-agonists ≥ 80 μg/d (salmeterol or equivalent) were included. Severe exacerbations, hospitalization, ED visits, and medication usage were evaluated for the 12 months prior to and at years 1 through 5 posttreatment. Spirometry was evaluated at baseline and at years 1 through 5 posttreatment. Results: A total of 284 subjects were enrolled at 27 centers; 227 subjects (80%) completed 5 years of follow-up. By year 5 posttreatment, the proportion of subjects with severe exacerbations, ED visits, and hospitalizations was 42.7%, 7.9%, and 4.8%, respectively, compared with 77.8%, 29.4%, and 16.1% in the 12 months prior to treatment. The proportion of subjects on maintenance oral corticosteroids decreased from 19.4% at baseline to 9.7% at 5 years. Analyses of subgroups based on baseline clinical and biomarker characteristics revealed a statistically significant clinical improvement among all subgroups. Interpretation: Five years after treatment, subjects experienced decreases in severe exacerbations, hospitalizations, ED visits, and corticosteroid exposure. All subgroups demonstrated clinically significant improvement, suggesting that bronchial thermoplasty improves asthma control in different asthma phenotypes. Clinical Trial Registration: ClinicalTrials.gov; No.: NCT01350336; URL: www.clinicaltrials.gov

Radiation Oncology

Williams A, **Gilbert M**, and **Siddiqui F**. Cannabis Use, Pain, and Outcomes in Patients with Head and Neck Cancer Treated with Radiotherapy. *Psychooncology* 2022; 31:71-72. PMID: Not assigned. Full Text

Background/Purpose: Marijuana use in the population is increasing as states continue to allow for both medicinal and recreational use. As such, the prevalence of marijuana uses among patients presenting for treatment of head and neck cancer (HNC) is likely to increase as well. Anecdotally, patients are asking about marijuana use during cancer treatment and, to date, oncology professionals are lacking sufficient data to advise their patients on use during cancer care. Further, the impact of marijuana use on pain management, local disease control, and survival in HNC is not well understood. The current study examines the associations between marijuana use, pain management, and cancer outcomes in patients with HNC squamous cell carcinoma. Methods: Patients with psychosocial and substance abuse history who were treated with either definitive or adjuvant radiotherapy between August 2018 and March 2020 were included. Overall survival (OS) and disease-free survival (DFS) were compared between current marijuana users and non-users using Kaplan-Meier curves and log-rank tests. Results: 148 patients with

HNC were included (mean age = 62.1 years, SD = 9.1), 78% were male, 73% were white. 15% of patients reported marijuana use at time of initial diagnosis and 34% reported a history of marijuana use. Older patients and males were more likely to be currently using marijuana (p = 0.005 and p = 0.04, respectively). There were no differences between current and historical/never users on self-reported worst pain or objective measures of treatment toxicity, current marijuana users were more likely to require narcotic pain medications and require a greater number of types of pain medications during treatment (p = 0.002 and p = 0.007, respectively). No other differences were found between current or historical/never users. Conclusions and Implications: Marijuana use in HNC may result in more difficulty managing pain during treatment. Further research is needed to better understand marijuana use during cancer treatment, particularly frequency and method of use, outcomes, and quality of life.

Surgery

Brajcich BC, Stigall K, Walsh DS, Varghese TK, Barber AE, **Kralovich KA**, Wescott AB, Pockaj BA, Ko CY, and Laronga C. Preoperative Nutritional Optimization of the Oncology Patient: A Scoping Review. *J Am Coll Surg* 2022; 234(3):384-394. PMID: Not assigned. Request Abstract

[Brajcich, Brian C.; Ko, Clifford Y.] Amer Coll Surg, Div Res & Optimal Patient Care, 633 N St Clair St,23rd Floor, Chicago, IL 60611 USA. [Brajcich, Brian C.] Northwestern Med, Dept Surg, Surg Outcomes & Qual Improvement Ctr, Chicago, IL USA. [Stigall, Kyle] San Antonio Mil Med Ctr, San Antonio, TX USA. [Walsh, Danielle S.] East Carolina Univ, Div Pediat Surg, Brody Sch Med, Greenville, NC USA. [Varghese, Thomas K.] Univ Utah, Div Cardiothorac Surg, Salt Lake City, UT USA. [Barber, Annabel E.] Univ Nevada Las Vegas, Dept Surg, Sch Med, Las Vegas, NV USA. [Kralovich, Kurt A.] Henry Ford Hlth Syst, Dept Surg, Detroit, MI USA. [Wescott, Annie B.] Northwestern Univ, Feinberg Sch Med, Chicago, IL 60611 USA. [Pockaj, Barbara A.] Mayo Clin, Phoenix, AZ USA. [Ko, Clifford Y.] Univ Calif Los Angeles, David Geffen Sch Med, Dept Surg, Los Angeles, CA 90095 USA. [Ko, Clifford Y.] Univ Cambridge, Healthcare Improvement Studies Inst, Cambridge, England. [Laronga, Christine] H Lee Moffitt Canc Ctr & Res Inst, Dept Breast Oncol, Tampa, FL USA.
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BACKGROUND Malnutrition is common among patients with cancer and is a known risk factor for poor postoperative outcomes; however, preoperative nutritional optimization guidelines are lacking in this high-risk population. The objective of this study was to review the evidence regarding preoperative nutritional optimization of patients undergoing general surgical operations for the treatment of cancer. METHODS A literature search was performed across the Ovid (MEDLINE), Cochrane Library (Wiley), Embase (Elsevier), CINAHL (EBSCOhost), and Web of Science (Clarivate) databases. Eligible studies included randomized clinical trials, observational studies, reviews, and meta-analyses published between 2010 and 2020. Included studies evaluated clinical outcomes after preoperative nutritional interventions among adult patients undergoing surgery for gastrointestinal cancer. Data extraction was performed using a template developed and tested by the study team. RESULTS A total of 5,505 publications were identified, of which 69 studies were included for data synthesis after screening and full text review. These studies evaluated preoperative nutritional counseling, protein-calorie supplementation, immunonutrition supplementation, and probiotic or symbiotic supplementation. CONCLUSIONS Preoperative nutritional counseling and immunonutrition supplementation should be considered for patients undergoing surgical treatment of gastrointestinal malignancy. For malnourished patients, protein-calorie supplementation should be considered, and for patients undergoing colorectal cancer surgery, probiotics or symbiotic supplementation should be considered.

Surgery

Devgun J, **Abdelrahim E**, **Ahmed F**, **Kazem A**, **Singh-Kucukarslan G**, **Nemeh H**, and **Maskoun W**. TRICUSPID VALVE DISEASE AND RIGHT VENTRICULAR DYSFUNCTION AFTER RIGHT VENTRICULAR TRANSVENOUS LEAD PLACEMENT IN PATIENTS WITH TRICUSPID VALVE PROSTHESIS. *J Am Coll Cardiol* 2022; 79(9):1694. PMID: Not assigned. Full Text

Background First time transvenous right ventricular (RV) lead implant after tricuspid valve (TV) repair or bioprosthetic replacement is common. We evaluated outcomes in TV regurgitation (TR) and RV function in this population. Methods We conducted single-center retrospective study on patients with TV repair or replacement from 2000 to 2020 followed by first-time transvenous RV lead implant. Primary outcomes were change in TR severity (defined as defined as none/trivial, mild, moderate, moderate-severe, or severe) and RV function (normal, mild, moderate, or severe). Baseline and follow-up echocardiogram (ECHO) data was reviewed, as well as time to death. Results 52 patients were identified (29 female, 47 had hypertension, 41 had atrial fibrillation, 49 had TV repair, 3 had replacement). Median time from surgery to implant was 1.7 months and to last ECHO was 39.7 months. In TV repair, baseline TR was none/trivial in 15 (30.6%) and mild in 21 (42.8%) patients. RV function was normal in 33 (67.3%) patients. 58% had worsened TR (mean 0.9 levels) (Figure). No TR change was seen in TV replacement. Mean worsening RV function was by 0.9 levels. There was statistically significant correlation with RV pacing and RV dysfunction (Spearman correlation coefficient 0.37, p = 0.017), but not with change in TR (p = 0.36). 22 patients died at median follow-up (48.9 months). Conclusion Presence of an RV lead after TV repair correlated with worsening TR. Higher RV pacing level correlated with RV dysfunction but not TR severity. [Formula presented]

Surgery
Potti C, **Natour AK**, **Woodward A**, and **Kabbani L**. Primary aortoesophageal fistula from metallic bristle ingestion. *J Vasc Surg Cases Innov Tech* 2022; 8(1):77-80. PMID: Not assigned. Full Text

L. Kabbani, Division of Vascular Surgery, Henry Ford Hospital, 2799 W Grand Blvd, Detroit, MI, United States

Although many patients are treated for the removal of ingested foreign objects each year, ingestions that perforate the esophagus and lead to intra-abdominal complications are rare. Aortoesophageal fistulas and aortic pseudoaneurysms are deadly complications of esophageal foreign body impaction. However, the surgical approach to aortic repair from foreign object damage has not been standardized. We have described the diagnostic, open surgical, and therapeutic approach to treating a man who had accidentally ingested a 3-cm metallic bristle that lodged in his aortic wall. The patient recovered after excision of the aortic pseudoaneurysm with CryoGraft (CryoLife, Inc, Kennesaw, Ga) replacement, drainage of abscesses, and antibiotic treatment for multiple infections.

Henry Ford Health Publications on COVID-19

Administration
Vendittelli P, **Coriasso N**, **Boshara A**, **Makki T**, **Tita C**, and Zein RK. DON'T BLAME THE VACCINE. *J Am Coll Cardiol* 2022; 79(9):2570. PMID: Not assigned. Full Text

Cardiology/Cardiovascular Research
Diaczok B, Nair G, **Lin CH**, Paxton JH, Abbas A, **Barkley G**, **O'Neil B**, **O'Neil W**, Patel K, Sims M, **Poisson L**, and Sule AA. Evolution of prescribing practices and outcomes in the COVID-19 pandemic in metropolitan areas. *Infez Med* 2022; 30(1):86-95. PMID: 35350268. Full Text

Cardiology/Cardiovascular Research
Lee Y, Jehangir Q, **Lin CH**, **Li P**, Krishnamoorthy G, Sule A, Apala D, Halabi AR, **Patel K**, **Wang DD**, **Poisson L**, and Nair GB. RISK FACTORS OF ARTERIAL THROMBOEMBOLISM IN HOSPITALIZED COVID-19 PATIENTS: A MULTICENTER COHORT STUDY. *J Am Coll Cardiol* 2022; 79(9):1842. PMID: Not assigned. Full Text

Cardiology/Cardiovascular Research
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Cardiology/Cardiovascular Research
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