Sladen Library
Great Research • Great Care • Start Here

HENRY FORD HEALTH

Henry Ford Health Publication List – September 2023

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 129 unique citations listed this month, including 114 articles and 15 conference abstracts. Articles are listed first, followed by conference abstracts. 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

Hoffert MM, **Pfeiffer L**, **Hepke M**, **Brink W**, **Newman J**, **Passalacqua KD**, and **Baker-Genaw K**. Gathering Trainee Feedback to Improve Programs With Low Annual ACGME Survey Content Area Compliance: A Pilot Study. *Acad Med* 2023; Epub ahead of print. PMID: 37748087. Full Text

M.M. Hoffert is director, Medical Education Instructional Design and Learning Systems & Resources, Graduate Medical Education, Henry Ford Health, Detroit, Michigan; ORCID: https://orcid.org/0000-0002-4941-4226.
L. Pfeiffer is manager, Accreditation, Medical Education, Graduate Medical Education, Henry Ford Health, Detroit, Michigan.
M. Hepke is manager, Accreditation, Medical Education, Graduate Medical Education, Henry Ford Health, Detroit, Michigan.
W. Brink is medical education coordinator, Graduate Medical Education, Henry Ford Health, Detroit, Michigan.
J. Newman is manager, Medical Education Instructional Design and Learning Systems & Resources, Graduate Medical Education, Henry Ford Health, Detroit, Michigan; ORCID: https://orcid.org/0000-0001-7815-5852.
K.D. Passalacqua is lead, Medical Writing and Education, Graduate Medical Education, Henry Ford Health, Detroit, Michigan; ORCID: https://orcid.org/0000-0002-2672-3261.
K. Baker-Genaw is director, Medical Education, and designated institutional officer, Graduate Medical Education and Department of Internal Medicine, Henry Ford Health, Detroit, Michigan,; ORCID: https://orcid.org/0000-0003-1552-2808.

PROBLEM: Systematically investigating annual Accreditation Council for Graduate Medical Education (ACGME) Resident/Fellow Survey results by directly gathering trainee feedback could uncover training program problems and clarify misunderstandings as they arise, leading to faster corrective actions and program improvement. APPROACH: The Focus Group Forum (FGF) was created based on the utilization-focused evaluation approach to systematically gather comprehensive, high-quality, actionable trainee feedback on specific annual ACGME survey results and involve trainees in program improvement (Henry Ford Hospital, 2021). Trainees from programs with survey results indicating <80% compliance within several content areas were invited to attend FGF sessions. During FGF sessions, neutral moderators experienced in conducting focus groups and creating psychologically safe spaces and neutral scribes gathered trainee feedback on survey results through structured, iterative discussions and an anonymous electronic polling system. Summaries of FGF findings were created, combined with actual annual ACGME survey data, and used to develop recommended corrective actions and monitoring plans. OUTCOMES: In 2021, 6 training programs had survey results below the institution's compliance threshold for 4-8 of the 9 content areas. Of the 180 trainees (from the 6 programs) invited to attend an FGF session, 79 (44%) participated. Five key issues were identified: misinterpretation of several survey questions, lack of knowledge of institutional policies and procedures, perceived inability to share feedback with faculty, feelings of being overwhelmed with administrative duties, and lack of sufficient protected time for educational activities and requirements. NEXT STEPS: The authors are developing an FGF process for faculty so that all stakeholders have a voice regarding annual ACGME survey results. They are also improving scheduling processes so that feedback from experienced trainees who are leaving the institution will not be missed and developing longer-term processes for tracking outcomes since time for implementing corrective actions before the next ACGME survey is limited.

Allergy and Immunology

Ishak R, **Todter E**, **Sitarik AR**, **Zoratti E**, **Kim H**, **Joseph C**, **Johnson CC**, Ownby DR, and **Eapen A**. Early childhood atopic phenotypes and the development of allergic respiratory disease. *Pediatr Allergy Immunol* 2023; 34(9):e14029. PMID: 37747744. Full Text

Division of Allergy and Clinical Immunology, Henry Ford Hospital, Detroit, Michigan, USA.
Department of Public Health Sciences, Henry Ford Hospital, Detroit, Michigan, USA.
Augusta University Medical Center, Augusta, Georgia, USA.

Allergy and Immunology

Keet C, Sicherer SH, Bunyavanich S, Visness C, Fulkerson PC, Togias A, Davidson W, Perry S, Hamrah S, Calatroni A, Robinson K, Dunaway L, Davis CM, Anvari S, Leong-Kee SM, Hershey GK, DeFranco E, Devonshire A, **Kim H**, **Joseph C**, **Davidson B**, Strong NK, Tsuang AJ, Groetch M, Wang J, Dantzer J, Mudd K, Aina A, Shreffler W, Yuan Q, Simmons V, Leung DYM, Hui-Beckman J, Ramos JA, Chinthrajah S, Winn V, Sindher T, Jones SM, Manning NA, Scurlock AM, Kim E, Stuebe A, Gern JE, Singh AM, Krupp J, and Wood RA. The SunBEAm birth cohort: Protocol design. *J Allergy Clin Immunol Glob* 2023; 2(3). PMID: 37771674. Full Text

Department of Pediatrics, University of North Carolina, Chapel Hill.
Icahn School of Medicine at Mount Sinai, New York.
Rho Inc, Federal Research Operations, Durham.
Division of Allergy, Immunology and Transplantation, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda.
Department of Pediatrics, Baylor College of Medicine, Houston.
Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston.
Cincinnati Children's Hospital Medical Center, Cincinnati.
University of Cincinnati, Cincinnati.
Henry Ford Health, Detroit.
Department of Pediatrics, Division of Pediatric Allergy, Immunology and Rheumatology, Johns Hopkins University School of Medicine, Baltimore.
Department of Obstetrics and Gynecology, Johns Hopkins University School of Medicine, Baltimore.
Massachusetts General Hospital, Boston.
Massachusetts General Hospital, Newton-Wellesley Hospital, Newton.
National Jewish Health, Denver.
Saint Joseph Hospital of Obstetrics and Gynecology, Denver.
Sean N. Parker Center for Allergy and Asthma Research, Stanford University, Palo Alto.
Division Maternal Fetal Medicine and Obstetrics, Stanford University, Palo Alto.
University of Arkansas for Medical Sciences and Arkansas Children's Hospital, Little Rock.
University of Arkansas for Medical Sciences, Little Rock.
Department of Obstetrics and Gynecology, University of North Carolina, Chapel Hill.
Department of Pediatrics, University of Wisconsin, Madison.
Maternal and Fetal Medicine, Obstetrics and Gynecology, SSM Health, Madison.

BACKGROUND: Food allergy (FA) and atopic dermatitis (AD) are common conditions that often present in the first year of life. Identification of underlying mechanisms and environmental determinants of FA and AD is essential to develop and implement effective prevention and treatment strategies. Objectives: We sought to describe the design of the Systems Biology of Early Atopy (SunBEAm) birth cohort. METHODS: Funded by the National Institute of Allergy and Infectious Diseases (NIAID) and administered through the Consortium for Food Allergy Research (CoFAR), SunBEAm is a US population-based, multicenter birth cohort that enrolls pregnant mothers, fathers, and their newborns and follows them to 3 years. Questionnaire and biosampling strategies were developed to apply a systems biology approach to identify environmental, immunologic, and multiomic determinants of AD, FA, and other allergic outcomes. RESULTS: Enrollment is currently underway. On the basis of an estimated FA prevalence of 6%, the enrollment goal is 2500 infants. AD is defined on the basis of questionnaire and assessment, and FA is defined by an algorithm combining history and testing. Although any FA will be recorded, we focus on the diagnosis of egg, milk, and peanut at 5 months, adding wheat, soy, cashew, hazelnut, walnut, codfish, shrimp, and sesame starting at 12 months. Sampling includes blood, hair, stool, dust, water, tape strips, skin swabs, nasal secretions, nasal swabs, saliva, urine, functional aspects of the skin, and maternal breast milk and vaginal swabs. CONCLUSIONS: The SunBEAm birth cohort will provide a rich repository of data and specimens to interrogate mechanisms and determinants of early allergic outcomes, with an emphasis on FA, AD, and systems biology.

Anesthesiology
Maroun W, Abi Shadid C, **Fayed M**, Foz C, Beresian J, and Oseili A. Perioperative Autonomic Dysfunction in a Patient With Charcot-Marie-Tooth Disease: A Case Report. *A A Pract* 2023; 17(9):e01722. PMID: 37703136. Full Text

From the Department of Anesthesiology and Pain Medicine at the American University of Beirut, Beirut, Lebanon.
Department of Anesthesiology and Pain Medicine, Henry Ford Health, Detroit, Michigan.

Autonomic dysfunction can lead to unexpected hemodynamic instability during surgery, and best practices for the perioperative care of patients with this condition are not well-defined. We report the case of a 63-year-old woman with Charcot-Marie-Tooth disease who experienced perioperative autonomic dysfunction characterized by severe fluctuations in blood pressure while under spinal anesthesia. However, <1 month later, a second hip surgery performed under general anesthesia with special precautions resulted in an uncomplicated perioperative course, with only mild fluctuations in blood pressure.

Anesthesiology
Phillips ML, Tsao M, Davis-Sandfoss A, Benzon H, **Mitchell JD**, Barsuk JH, and Ballard HA. Use of Simulation-Based Mastery Learning Curriculum to Improve Difficult Conversation Skills Among Anesthesiologists: A Pilot Study. *J Educ Perioper Med* 2023; 25(3):E710. PMID: 37720371. Full Text

The following authors are in the Department of Pediatric Anesthesiology at Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL; , and are Assistant Professors; is a Fellow; and is an Associate Professor. is a Professor of Anesthesiology and Vice Chair for Academic Affairs in the Department of Anesthesiology, Perioperative Medicine & Pain Management at Henry Ford Health, Detroit, MI. is a Professor in the Department of Medicine at Northwestern University Feinberg School of Medicine, Chicago, IL.

BACKGROUND: Breaking bad news (BBN) is an important clinical task for physicians. Unfortunately, there is no standard method to teach and assess these skills of anesthesiologists. Although anesthesiology has become a relatively safe medical specialty, complications still occur that require disclosure to patients and their families. Disclosure of bad news can be a significant source of stress for clinicians, especially for those who have low confidence in their BBN skills. Anesthesiologists' skills in BBN can be improved with simulation-based mastery learning (SBML), an intense form of competency-based learning. METHODS: An SBML curriculum was developed using the SPIKES (Situation, Perception, Invitation, Knowledge, Emotion, Summarize) framework for BBN and the NURSE (Naming, Understanding, Respecting, Supporting, Exploring) statements for expressing empathy. A pretest-posttest study was conducted from March 2020 to June 2022 to evaluate anesthesiologists' performance in BBN. Participants completed a 2-hour curriculum consisting of a pretest, didactic session, deliberate practice with feedback, and a posttest. Anesthesiologists were assessed using a 16-item skills checklist. RESULTS: Six anesthesiology attendings and 14 anesthesiology fellows were enrolled in the study. Three of 20 participants met the minimum passing score (MPS) at the time of their pretest. All study participants met the MPS on their first posttest ($P < .001$). The median participant confidence in BBN significantly increased (3 to 4, $P < .001$). Overall course satisfaction in the curriculum was high, with a median score of 5. CONCLUSIONS: Our study demonstrates that a BBN SBML curriculum for anesthesiologists significantly improved communication skills and confidence in a simulated environment. Because only 3 participants met the MPS before training, our results suggest that anesthesiologists could benefit from further education to gain effective communication skills and that SBML training may be effective to achieve this result.

Anesthesiology
Walsh DP, Wong VT, and **Mitchell JD**. Resident Engagement With a Web- and App-based Journal Club Curriculum Utilizing Email and Text Notifications. *J Educ Perioper Med* 2023; 25(3):E713. PMID: 37720368. Full Text

is Associate Residency Program Director in the Department of Anesthesia, Critical Care and Pain Medicine at Beth Israel Deaconess Medical Center, Boston, MA; Medical Director of the Intensive Care Unit at Beth Israel Deaconess Hospital-Plymouth, Plymouth, MA; and Instructor in Anesthesia at Harvard Medical School, Boston, MA. is Project Manager, Center for Education Research, Technology, and Innovation (CERTAIN) in the Department of Anesthesia, Critical Care and Pain Medicine at Beth Israel Deaconess Medical Center, Boston, MA. is Vice Chair for Academic Affairs in the Department of Anesthesiology, Pain Management and Perioperative Medicine at Henry Ford Health, Jackson, MI, and a Professor and Vice Chair in the Department of Anesthesiology at Michigan State University, East Lansing, MI.

BACKGROUND: High learner engagement is important for the success of asynchronous and online learning for graduate medical education. Medical trainees have recently reported using medical mobile apps. App-based interactions may provide more participation than email-based interactions. We sought to investigate (1) if there were higher levels of engagement with an online curriculum using notifications sent via email as compared with via text, and (2) if there were higher levels of engagement with the mobile app or website format. METHODS: We implemented an online Journal Club curriculum with weekly topics for anesthesiology residents (postgraduate years 2-4) from July 2020 to June 2021. Weekly notifications were sent to residents via email for weeks 1-10, text for weeks 11-20, then email for weeks 21-49. Based on activity logs, we compared (1) the weekly numbers of interactions when email notifications were sent with the weekly numbers of interactions when text notifications were sent, and (2) the weekly numbers of interactions via the app with the weekly numbers of interactions via the website. RESULTS: Thirty-eight of the 54 anesthesiology residents in our department at the time of the study (70.4%) interacted with the online Journal Club at least once throughout the study. The weekly numbers of interactions with email notifications (median [interquartile range (IQR)]: 13 [7-28]) were significantly higher than with text notifications (median [IQR]: 6 [4-8]) (P = .023). The weekly numbers of interactions via the website (median [IQR]: 9 [4-24]) were significantly higher than via the app (median [IQR]: 0 [0-1]) (P < .001). CONCLUSIONS: Although mobile technology may increase engagement and participation for some educational resources, learners may prefer accessing others through more conventional methods.

Behavioral Health Services/Psychiatry/Neuropsychology

Braciszewski JM, **Hecht LM**, Barnett NP, Moore RS, **Carlin AM**, **Haley EN**, and **Miller-Matero LR**. Preventing alcohol use post-bariatric surgery: patient perspectives on a technology-based approach. *Surg Endosc* 2023; Epub ahead of print. PMID: 37670188. Full Text

Center for Health Policy and Health Services Research, Henry Ford Health, One Ford Place, Suite 5E, Detroit, MI, 48202, USA. jbracis1@hfhs.org.
Center for Health Policy and Health Services Research, Henry Ford Health, One Ford Place, Suite 5E, Detroit, MI, 48202, USA.
Department of Behavioral and Social Sciences, Center for Alcohol and Addiction Studies, Brown University, Providence, USA.
Prevention Research Center, Pacific Institute for Research and Evaluation, Berkeley, USA.
Department of Surgery, Henry Ford Health, Detroit, USA.
Behavioral Health, Henry Ford Health, Detroit, USA.

BACKGROUND: Nearly two-thirds of patients engage in alcohol use after bariatric surgery, while a substantial number meet criteria for alcohol use disorder after their procedure. Given that pre-surgical education may not be sufficient, alternative methods of preventing post-surgical drinking are needed. We sought feedback on a proposed technology-based intervention to reduce alcohol use for individuals who have undergone bariatric surgery. METHODS: Twenty patients who consumed alcohol post-surgery completed qualitative interviews where they provided opinions on sample intervention content, delivery method, timing, and other aspects of a two-session web-based intervention followed by tailored text messaging for 6 months. Interviews were recorded, transcribed, and coded using thematic analysis principles. RESULTS: Participants strongly endorsed using technology to deliver an alcohol intervention, citing the interactivity and personal tailoring available in the proposed software. Education about the effects of post-surgical drinking and learning new coping strategies for social situations were the two most salient themes to emerge from questions about intervention content. Throughout the interviews,

participants strongly highlighted the importance of measuring patient readiness to change alcohol use and matching intervention content to such motivation levels. Respondents felt that text messages could extend what they had learned, but also requested additional non-alcohol content (e.g., recipes, exercise tips). Most participants agreed that an online forum consisting of peers and professionals with whom they could ask questions and interact would be useful. CONCLUSION: Web- and text message-based interventions may be an acceptable approach to prevent alcohol use post-bariatric surgery.

Behavioral Health Services/Psychiatry/Neuropsychology
Llamocca EN, **Yeh HH**, **Miller-Matero LR**, **Westphal J**, **Frank CB**, Simon GE, Owen-Smith AA, Rossom RC, Lynch FL, Beck AL, Waring SC, Lu CY, Daida YG, Fontanella CA, and **Ahmedani BK**. Association Between Adverse Social Determinants of Health and Suicide Death. *Med Care* 2023; Epub ahead of print. PMID: 37708352. Full Text

Henry Ford Health, Center for Health Policy and Health Services Research.
Henry Ford Health, Behavioral Health Services.
Henry Ford Health, Department of Psychiatry, Detroit, MI.
Kaiser Permanente Washington, Health Research Institute, Seattle, WA.
Georgia State University, School of Public Health.
Kaiser Permanente Georgia, Center for Research and Evaluation, Atlanta, GA.
HealthPartners Institute, Bloomington, MN.
Kaiser Permanente Northwest, Center for Health Research, Portland, OR.
Kaiser Permanente Colorado, Institute for Health Research, Aurora, CO.
Essentia Health, Institute of Rural Health, Duluth, MN.
Harvard Medical School, Department of Population Medicine.
Harvard Pilgrim Health System, Harvard Pilgrim Health Care Institute, Boston, MA.
Kaiser Permanente Hawaii, Center for Integrated Health Research, Honolulu, HI.
Nationwide Children's Hospital, Abigail Wexner Research Institute, Center for Suicide Prevention and Research.
The Ohio State University, Department of Psychiatry and Behavioral Health, Columbus, OH.

OBJECTIVE: The aim of this study was to identify adverse social determinants of health (SDoH) International Statistical Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code prevalence among individuals who died by suicide and to examine associations between documented adverse SDoH and suicide. RESEARCH DESIGN: A case-control study using linked medical record, insurance claim, and mortality data from 2000 to 2015 obtained from 9 Mental Health Research Network-affiliated health systems. We included 3330 individuals who died by suicide and 333,000 randomly selected controls matched on index year and health system location. All individuals in the study (cases and controls) had at least 10 months of enrollment before the study index date. The index date for the study for each case and their matched controls was the suicide date for that given case. RESULTS: Adverse SDoH documentation was low; only 6.6% of cases had ≥1 documented adverse SDoH in the year before suicide. Any documented SDoH and several specific adverse SDoH categories were more frequent among cases than controls. Any documented adverse SDoH was associated with higher suicide odds [adjusted odds ratio (aOR)=2.76; 95% CI: 2.38-3.20], as was family alcoholism/drug addiction (aOR=18.23; 95% CI: 8.54-38.92), being an abuse victim/perpetrator (aOR=2.53; 95% CI: 1.99-3.21), other primary support group problems (aOR=1.91; 95% CI: 1.32-2.75), employment/occupational maladjustment problems (aOR=8.83; 95% CI: 5.62-13.87), housing/economic problems (aOR: 6.41; 95% CI: 4.47-9.19), legal problems (aOR=27.30; 95% CI: 12.35-60.33), and other psychosocial problems (aOR=2.58; 95% CI: 1.98-3.36). CONCLUSIONS: Although documented SDoH prevalence was low, several adverse SDoH were associated with increased suicide odds, supporting calls to increase SDoH documentation in medical records. This will improve understanding of SDoH prevalence and assist in identification and intervention among individuals at high suicide risk.

Behavioral Health Services/Psychiatry/Neuropsychology
Miller-Matero LR, **Yeh HH**, **Ahmedani BK**, Rossom RC, Harry ML, Daida YG, and Coleman KJ. Suicide attempts after bariatric surgery: comparison to a nonsurgical cohort of individuals with severe obesity. *Surg Obes Relat Dis* 2023; Epub ahead of print. PMID: 37758538. Full Text

Behavioral Health, Henry Ford Health, Detroit, Michigan; Center for Health Policy and Health Services Research, Henry Ford Health, Detroit, Michigan. Electronic address: Lmatero1@hfhs.org.
Center for Health Policy and Health Services Research, Henry Ford Health, Detroit, Michigan.
Behavioral Health, Henry Ford Health, Detroit, Michigan; Center for Health Policy and Health Services Research, Henry Ford Health, Detroit, Michigan.
HealthPartners Institute, Bloomington, Minnesota.
Essentia Institute of Rural Health, Duluth, Minnesota.
Kaiser Permanente Hawaii, Honolulu, Hawaii.
Kaiser Permanente Southern California, Irvine, California; Kaiser Permanente Bernard J. Tyson School of Medicine, Pasadena, California.

BACKGROUND: The rate of suicide is higher among individuals following bariatric surgery compared with the general population; however, it is not clear whether risk is associated with bariatric surgery beyond having severe obesity. OBJECTIVE: To compare the risk of a suicide attempt among those who had bariatric surgery versus a nonsurgical cohort with severe obesity. SETTING: Aggregate count data were collected from 5 healthcare systems. METHODS: Individuals were identified in the surgical cohort if they underwent bariatric surgery between 2009 and 2017 (n = 35,522) and then were compared with a cohort of individuals with severe obesity who never had bariatric surgery (n = 691,752). Suicide attempts were identified after study enrollment date using International Classification of Diseases, Ninth and Tenth Editions (ICD-9 and ICD-10) diagnosis codes from 2009 to 2021. RESULTS: The relative risk of a suicide attempt was 64% higher in the cohort with bariatric surgery than that of the nonsurgical cohort (2.2% versus 1.3%; relative risk = 1.64; 95% CI, 1.53-1.76). Within the cohort with bariatric surgery, suicide attempts were more common among the 18- to 39-year age group (P < .001), women (P = .002), Hawaiian-Pacific Islanders (P < .001), those with Medicaid insurance (P < .001), and those with a documented mental health condition at baseline (in the previous 2 years; P < .001). CONCLUSIONS: The relative risk of suicide attempts was higher among those who underwent bariatric surgery compared with a nonsurgical cohort, though absolute risk remained low. Providers should be aware of this increased risk. Screening for suicide risk after bariatric surgery may be useful to identify high-risk individuals.

Cardiology/Cardiovascular Research

Ahsan ST, Esponda O, Li W, Amini R, Shaydakov M, Wheeler J, and Fukaya E. SVM Communications: Venous Taskforce update and Society announcements. *Vasc Med* 2023; Epub ahead of print. PMID: 37669239. Full Text

Heart and Vascular Institute, Henry Ford Health, Detroit, MI, USA.
Vein Specialists, Fort Myers, FL, USA.
Shanghai Vascular Aging and Cardio-Cerebrovascular Disease Council, Shanghai, China.
Division of Cardiology, Loma Linda University Medical Center, Loma Linda, CA, USA.
Department of Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA, USA.
Department of Vascular Medicine, Cleveland Clinic, Weston, FL, USA.
Cardiovascular Institute, Stanford University School of Medicine, Stanford, CA, USA.

Cardiology/Cardiovascular Research

Alexandrou M, Rempakos A, Al Ogaili A, Choi JW, Poommipanit P, **Alaswad K**, **Basir MB**, Davies R, Benton S, Jaffer FA, Chandwaney RH, Azzalini L, Kearney KE, ElGuindy AM, Abi Rafeh N, Goktekin O, Gorgulu S, Khatri JJ, Aygul N, Vo MN, Cincin A, Rangan BV, Mastrodemos OC, Allana SS, Sandoval Y, Burke MN, and Brilakis ES. Balloon-assisted subintimal entry (BASE) in chronic total occlusion percutaneous coronary interventions. *Catheter Cardiovasc Interv* 2023; Epub ahead of print. PMID: 37676010. Full Text

Minneapolis Heart Institute and Minneapolis Heart Institute Foundation, Abbott Northwestern Hospital, Minneapolis, Minnesota, USA.
Texas Health Presbyterian Hospital, Dallas, Texas, USA.
University Hospitals, Case Western Reserve University, Cleveland, Ohio, USA.
Henry Ford Cardiovascular Division, Detroit, Michigan, USA.

WellSpan York Hospital, York, Pennsylvania, USA.
Massachusetts General Hospital, Boston, Massachusetts, USA.
Oklahoma Heart Institute, Tulsa, Oklahoma, USA.
Division of Cardiology, Department of Medicine, University of Washington, Seattle, Washington, USA.
Aswan Heart Center, Magdi Yacoub Foundation, Cairo, Egypt.
North Oaks Health System, Hammond, Louisiana, USA.
Memorial Bahcelievler Hospital, Istanbul, Turkey.
Biruni University Medical School, Istanbul, Turkey.
Cleveland Clinic, Cleveland, Ohio, USA.
Selcuk University, Konya, Turkey.
Royal Columbian Hospital, Vancouver, British Columbia, Canada.
Marmara University School of Medicine Pendik, Training and Research Hospital, Kaynarca, Turkey.

BACKGROUND: There is limited data on the use of the balloon-assisted subintimal entry (BASE) technique in chronic total occlusion (CTO) percutaneous coronary intervention (PCI). METHODS: We analyzed the baseline clinical and angiographic characteristics and outcomes of 155 CTO PCIs that utilized the BASE technique at 31 US and non-US centers between 2016 and 2023. RESULTS: The BASE technique was used in 155 (7.9%) of 1968 antegrade dissection and re-entry (ADR) cases performed during the study period. The mean age was 66 ± 10 years, 88.9% of the patients were men, and the prevalence of diabetes (44.6%), hypertension (90.5%), and dyslipidemia (88.7%) was high. Compared with 1813 ADR cases that did not use BASE, the target vessel of the BASE cases was more commonly the RCA and less commonly the LAD. Lesions requiring BASE had longer occlusion length (42 ± 23 vs. 37 ± 23 mm, p = 0.011), higher Japanese CTO (J-CTO) (3.4 ± 1.0 vs. 3.0 ± 1.1, p < 0.001) and PROGRESS-CTO (Prospective Global Registry for the Study of Chronic Total Occlusion Intervention chronic total occlusion) (1.8 ± 1.0 vs. 1.5 ± 1.0, p = 0.008) scores, and were more likely to have proximal cap ambiguity, side branch at the proximal cap, blunt/no stump, moderate to severe calcification, and proximal tortuosity. Technical (71.6% vs. 75.5%, p = 0.334) and procedural success (71.6% vs. 72.8%, p = 0.821), as well as major adverse cardiac events (MACE) (1.3% vs. 4.1%, p = 0.124), were similar in ADR cases that used BASE and those that did not. CONCLUSIONS: The BASE technique is used in CTOs with longer occlusion length, higher J-CTO score, and more complex angiographic characteristics, and is associated with moderate success but also low MACE.

Cardiology/Cardiovascular Research

Davis EF, Crousillat DR, Peteiro J, Lopez-Sendon J, Senior R, Shapiro MD, Pellikka PA, Lyubarova R, Alfakih K, **Abdul-Nour K**, Anthopolos R, Xu Y, Kunichoff DM, Fleg JL, Spertus JA, Hochman J, Maron D, Picard MH, and Reynolds HR. Global Longitudinal Strain as Predictor of Inducible Ischemia in No Obstructive Coronary Artery Disease in the CIAO-ISCHEMIA study. *J Am Soc Echocardiogr* 2023; Epub ahead of print. PMID: 37722490. Full Text

Echocardiography Laboratory, Division of Cardiology, Massachusetts General Hospital, Boston, Massachusetts, USA; Victorian Heart Institute and Victorian Heart Hospital, Victoria, Australia.
Echocardiography Laboratory, Division of Cardiology, Massachusetts General Hospital, Boston, Massachusetts, USA; University of South Florida, Tampa, FL.
CHUAC, Universidad de A Coruña, CIBER-CV, A Coruna, Spain.
Hospital Universitario La Paz. Idipaz. UAM., Madrid, Spain.
Northwick Park Hospital-Royal Brompton Hospital, London, UK.
Wake Forest University School of Medicine, Winston-Salem, North Carolina, USA.
Mayo Clinic, Rochester, Minnesota, USA.
Albany Medical College, Albany, New York, USA.
King's College Hospital, London, UK.
Henry Ford Health System, Detroit, Michigan, USA.
Cardiovascular Clinical Research Center, Leon H. Charney Division of Cardiology, NYU Grossman School of Medicine, New York, New York, USA.
National Institute of Health- NHLBI, Bethesda, Maryland, USA.
Saint Luke's Mid America Heart Institute/University of Missouri - Kansas City (UMKC), Kansas City, Missouri, USA.

Department of Medicine, Stanford University School of Medicine, Stanford, California, USA.
Echocardiography Laboratory, Division of Cardiology, Massachusetts General Hospital, Boston, Massachusetts, USA.
Cardiovascular Clinical Research Center, Leon H. Charney Division of Cardiology, NYU Grossman School of Medicine, New York, New York, USA. Electronic address: harmony.reynolds@nyulangone.org.

BACKGROUND: Global longitudinal strain (GLS) is a sensitive marker for identifying subclinical myocardial dysfunction in obstructive coronary artery disease (CAD). Little is known about the relationship between GLS and ischemia in patients with myocardial ischemia and no obstructive CAD (INOCA). OBJECTIVES: To investigate the relationship between resting GLS and ischemia on stress echocardiography (SE) in patients with INOCA. METHODS: Left ventricular GLS was calculated offline on resting SE images at enrollment (n=144) and 1-year follow-up (n=120) in the CIAO-ISCHEMIA study, which enrolled participants with moderate or severe ischemia by local SE interpretation (>3 segments with new or worsening wall motion abnormality and no obstructive (<50% stenosis) CAD on coronary CT angiography. RESULTS: GLS values were normal in 83.3% at enrollment and 94.2% at follow-up. GLS values were not associated with a positive SE at enrollment (GLS -21.5% positive SE vs. GLS -19.9% negative SE, p=0.443), or follow-up (GLS -23.2% positive SE vs. GLS -23.1% negative SE, p=0.859). Significant change in GLS was not associated with positive SE in follow-up (p=0.401). Regional strain was not associated with co-localizing ischemia at enrollment or follow-up. Changes in GLS and number of ischemic segments from enrollment to follow-up showed a modest but not clinically meaningful correlation (β=0.41, 95% CI 0.16, 0.67, p=0.002). CONCLUSIONS: In this cohort of INOCA patients, resting GLS values were largely normal and did not associate with the presence, severity or location of stress-induced ischemia. These findings may suggest the absence of subclinical myocardial dysfunction detectable by echocardiographic strain analysis at rest in INOCA.

Cardiology/Cardiovascular Research

Guerrero ME, Eleid MF, **Wang DD**, Pursnani A, Kodali SK, George I, Palacios I, Russell H, Makkar RR, Kar S, Satler LF, Rajagopal V, Dangas G, Tang GHL, McCabe JM, Whisenant BK, Fang K, Balan P, Smalling R, Kaptzan T, Lewis B, Douglas PS, Hahn RT, Thaden J, Oh JK, Leon M, **O'Neill W**, and Rihal C. 5-Year Prospective Evaluation of Mitral Valve-in-Valve, Valve-in-Ring, and Valve-in-MAC Outcomes: MITRAL Trial Final Results. *JACC Cardiovasc Interv* 2023; 16(18):2211-2227. PMID: 37758379. Full Text

Department of Cardiovascular Medicine, Mayo Clinic, Rochester, Minnesota, USA. Electronic address: guerrero.mayra@mayo.edu.
Department of Cardiovascular Medicine, Mayo Clinic, Rochester, Minnesota, USA.
Center for Structural Heart Disease, Henry Ford Hospital, Detroit, Michigan, USA.
Division of Cardiology, NorthShore University HealthSystem, Evanston, Illinois, USA.
Division of Cardiology, Columbia University Medical Center, New York, New York, USA.
Department of Surgery, Columbia University Medical Center, New York, New York, USA.
Division of Cardiology, Massachusetts General Hospital, Boston, Massachusetts, USA.
Division of Cardiovascular Surgery, NorthShore University HealthSystem, Evanston, Illinois, USA.
Department of Cardiology, Cedars-Sinai Heart Institute, Los Angeles, California, USA.
Division of Cardiology, Los Robles Regional Medical Center, Thousand Oaks, California, USA.
Division of Cardiology, Medstar Washington Hospital Center, Washington, District of Columbia, USA.
Division of Cardiology, Piedmont Hospital, Atlanta, Georgia, USA.
Division of Cardiology, Mount Sinai Health System, New York, New York, USA.
Department of Cardiovascular Surgery, Mount Sinai Health System, New York, New York, USA.
Division of Cardiology, University of Washington Medical Center, Seattle, Washington, USA.
Division of Cardiology, Intermountain Heart Institute, Salt Lake City, Utah, USA.
Division of Cardiology, Banner University Medical Center, Phoenix, Arizona, USA.
Division of Cardiology, Memorial Hermann Heart and Vascular Center, Texas Medical Center, Houston, Texas, USA.
Cardiovascular Research Unit, Mayo Clinic, Rochester, Minnesota, USA.
Division of Biostatistics and Informatics, Mayo Clinic, Rochester, Minnesota, USA.
Duke Clinical Research Institute, Duke University, Durham, North Carolina, USA.

BACKGROUND: The MITRAL (Mitral Implantation of Transcatheter Valves) trial is the first prospective trial to evaluate the safety and feasibility of balloon-expandable aortic transcatheter heart valves in patients with failed surgical bioprostheses or annuloplasty rings and severe mitral annular calcification treated with mitral valve-in-valve (MViV), valve-in-ring (MViR), or valve-in-mitral annular calcification (ViMAC). OBJECTIVES: The aim of this study was to evaluate 5-year outcomes among these patients. METHODS: A multicenter prospective study was conducted among patients at high surgical risk at 13 U.S. sites. Patients underwent MViV (n = 30), MViR (n = 30), or ViMAC (n = 31) and were followed annually for 5 years. Kansas City Cardiomyopathy Questionnaire scores were obtained at baseline and follow-up visits. Echocardiograms were analyzed at independent core laboratories. RESULTS: A total of 91 patients underwent transcatheter mitral valve replacement (February 2015 to December 2017). The mean age was 74.3 ± 8.9 years. At 5-year follow-up, the lowest all-cause mortality was observed in the MViV group (21.4%), 94.7% of patients were in NYHA functional class I or II, and the mean mitral gradient was 6.6 ± 2.5 mm Hg. The MViR and ViMAC groups had higher all-cause mortality (65.5% and 67.9%), most survivors were in NYHA functional classes I and II (50% and 55.6%), and mean mitral gradients remained stable (5.8 ± 0.1 and 6.7 ± 2.5 mm Hg). Significant improvements in Kansas City Cardiomyopathy Questionnaire scores were observed when all 3 arms were pooled. CONCLUSIONS: MViV, MViR, and ViMAC procedures were associated with sustained improvement of heart failure symptoms and quality of life among survivors at 5 years. Transcatheter heart valve function remained stable in all 3 groups. Patients treated with MViV had excellent survival at 5 years, whereas survival was lower in the MViR and ViMAC groups, consistent with underlying disease severity. Patients with more residual mitral regurgitation had higher mortality.

Cardiology/Cardiovascular Research

Guerrero ME, Grayburn P, Smith RL, 2nd, Sorajja P, **Wang DD**, Ahmad Y, Blusztein D, Cavalcante J, Tang GHL, Ailawadi G, Lim DS, Blanke P, Eleid MF, Kaneko T, Thourani VH, Bapat V, Mack MJ, Leon MB, and George I. Diagnosis, Classification, and Management Strategies for Mitral Annular Calcification: A Heart Valve Collaboratory Position Statement. *JACC Cardiovasc Interv* 2023; 16(18):2195-2210. PMID: 37758378. Full Text

Mayo Clinic, Rochester, Minnesota, USA. Electronic address: mayraguerrero@icloud.com.
Baylor Scott & White Health, Plano, Texas, USA.
Minneapolis Heart Institute at Abbott Northwestern Hospital, Minneapolis, Minnesota, USA.
Henry Ford Health, Detroit, Michigan, USA.
Yale University School of Medicine, New Haven, Connecticut, USA.
Columbia University Irving Medical Center/NewYork-Presbyterian Hospital, New York, New York, USA.
Mount Sinai Health System, New York, New York, USA.
University of Michigan, Ann Arbor, Michigan, USA.
University of Virginia, Charlottesville, Virginia, USA.
St. Paul's Hospital, University of British Columbia, Vancouver, British Columbia, Canada.
Mayo Clinic, Rochester, Minnesota, USA.
Washington University School of Medicine, St. Louis, Missouri, USA.
Piedmont Heart Institute, Atlanta, Georgia, USA.

Mitral annular calcium (MAC) with severe mitral valvular dysfunction presents a complex problem, as valve replacement, either surgical or transcatheter, is challenging because of anatomy, technical considerations, concomitant comorbidities, and advanced age. The authors review the clinical and anatomical features of MAC that are favorable (green light), challenging (yellow light), or prohibitive (red light) for surgical or transcatheter mitral valve interventions. Under the auspices of the Heart Valve Collaboratory, an expert working group of cardiac surgeons, interventional cardiologists, and interventional imaging cardiologists was formed to develop recommendations regarding treatment options for patients with MAC as well as a proposed grading and staging system using both anatomical and clinical features.

Cardiology/Cardiovascular Research

Gui H, Tang WHW, Francke S, **Li J**, **She R**, Bazeley P, Pereira NL, Adams K, **Luzum JA**, Connolly TM, Hernandez AF, McNaughton CD, **Williams LK**, and **Lanfear DE**. Common Variants on FGD5 Increase Hazard of Mortality or Rehospitalization in Patients With Heart Failure From the ASCEND-HF Trial. *Circ Heart Fail* 2023; 16(9):e010438. PMID: 37725680. Full Text

Center for Individualized and Genomics Medicine Research (H.G., J.A.L., L.K.W., D.E.L.), Henry Ford Hospital, Detroit, MI.
Department of Cardiovascular Medicine, Cleveland Clinic, OH (W.H.W.T., P.B.).
Cary, NC (S.F.).
Department of Public Health Science (J.L., R.S.), Henry Ford Hospital, Detroit, MI.
Department of Cardiovascular Medicine, Mayo Clinic, Rochester, MN (N.L.P.).
Department of Medicine, University of North Carolina, Chapel Hill (K.A.).
Department of Clinical Pharmacy, University of Michigan, Ann Arbor (J.A.L.).
Lansdale, PA, previously Janssen Research & Development LLC, Spring House, PA (T.M.C.).
Duke Clinical Research Institute, Durham, NC (A.F.H.).
Department of Emergency Medicine, Vanderbilt University Medical Center, Nashville, TN (C.D.M.).
Heart and Vascular Institute (D.E.L.), Henry Ford Hospital, Detroit, MI.

BACKGROUND: Heart failure remains a global health burden, and patients hospitalized are particularly at risk, but genetic associates for subsequent death or rehospitalization are still lacking. METHODS: The genetic substudy of the ASCEND-HF trial (Acute Study of Clinical Effectiveness of Nesiritide in Decompensated Heart Failure) was used to perform genome-wide association study and transethnic meta-analysis. The overall trial included the patients of self-reported European ancestry (n=2173) and African ancestry (n=507). The end point was death or heart failure rehospitalization within 180 days. Cox models adjusted for 11 a priori predictors of rehospitalization and 5 genetic principal components were used to test the association between single-nucleotide polymorphisms and outcome. Summary statistics from the 2 populations were combined via meta-analysis with the significance threshold considered P<5×10(-)(8). RESULTS: Common variants (rs2342882 and rs35850039 in complete linkage disequilibrium) located in FGD5 were significantly associated with the primary outcome in both ancestry groups (European Americans: hazard ratio [HR], 1.38; P=2.42×10(-6); African ancestry: HR, 1.51; P=4.43×10(-)(3); HR in meta-analysis, 1.41; P=4.25×10(-8)). FGD5 encodes a regulator of VEGF (vascular endothelial growth factor)-mediated angiogenesis, and in silico investigation revealed several previous genome-wide association study hits in this gene, among which rs748431 was associated with our outcome (HR, 1.20; meta P<0.01). Sensitivity analysis proved FGD5 common variants survival association did not appear to operate via coronary artery disease or nesiritide treatment (P>0.05); and the signal was still significant when changing the censoring time from 180 to 30 days (HR, 1.39; P=1.59×10(-5)). CONCLUSIONS: In this multiethnic genome-wide association study of ASCEND-HF, single-nucleotide polymorphisms in FGD5 were associated with increased risk of death or rehospitalization. Additional investigation is required to examine biological mechanisms and whether FGD5 could be a therapeutic target. REGISTRATION: URL: https://www. CLINICALTRIALS: gov; Unique identifier: NCT00475852.

Cardiology/Cardiovascular Research

Keteyian SJ, and Piña IL. Heart failure and exercise cardiac rehabilitation in the 21(st) Century. *Heart Fail Rev* 2023; Epub ahead of print. PMID: 37775705. Full Text

Division of Cardiovascular Medicine, Henry Ford Hospital and Medical Group, 6525 Second Ave, Detroit, MI, 48202, USA. Sketeyi1@hfhs.org.
Thomas Jefferson University Hospital, 111 South 11th Street, Philadelphia, PA, 19107, USA.

Cardiology/Cardiovascular Research

Khalil M, Maraey A, Wahadneh OA, Elzanaty AM, Brilakis ES, **Alaswad K**, **Basir MB**, and Megaly M. Use of a Multidisciplinary Shock Team and Inhospital Mortality in Patients With Cardiogenic Shock. *Am J Cardiol* 2023; 206:200-201. PMID: 37708751. Full Text

Cardiology Department, University of Connecticut, Farmington, Connecticut.
Cardiology Department, University of Toledo, Toledo, Ohio.
Department of Internal Medicine, Carle Foundation Hospital, Urbana, Illinois.
Division of Cardiology, Minneapolis Heart Institute, Minneapolis, Minnesota.
Division of Cardiology, Henry Ford Hospital, Detroit, Michigan.
Division of Cardiology, Willis Knighton Heart Institute, Shreveport, Louisiana. Electronic address: michaelmegaly3@gmail.com.

Cardiology/Cardiovascular Research
Loh SX, Brilakis E, Gasparini G, Agostoni P, Garbo R, Mashayekhi K, **Alaswad K**, Goktiken O, Avran A, Knaapen P, Nap A, Elguindi A, Tammam K, Yamane M, Stone GW, and Egred M. Coils embolization use for coronary procedures: Basics, indications, and techniques. *Catheter Cardiovasc Interv* 2023; Epub ahead of print. PMID: 37668102. Full Text

Cardiothoracic Department, Freeman Hospital, Newcastle upon Tyne, UK.
Minneapolis Heart Institute and Minneapolis Heart Institute Foundation, Minneapolis, Minnesota, USA.
Department of Invasive Cardiology, Humanitas Clinical and Research Center, Rozzano, Milan, Italy.
HartCentrum, Ziekenhuis Netwerk Antwerpen (ZNA) Middelheim, Antwerp, Belgium.
Interventional Cardiology Department, Maria Pia Hospital, GVM Care & Research, Turin, Italy.
Internal Medicine and Cardiology, MediClin Heartcenter, Herzzentrum Lahr, Hohbergweg, Germany.
Edith and Benson Ford Heart and Vascular Institute, Henry Ford Hospital, Henry Ford Health System, Wayne State University, Detroit, Michigan, USA.
Memorial Hospital, Istanbul, Turkey.
Valenciennes Hospital, Valenciennes, France.
Department of Cardiology, Amsterdam UMC, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands.
Department of Cardiology, Aswan Heart Centre, Magdi Yacoub Foundation, Aswan, Egypt.
Cardiac Center of Excellence, International Medical Center, Jeddah, Saudi Arabia.
Saitima St. Luke's International Hospital, Tokyo, Japan.
The Zena and Michael A. Wiener Cardiovascular Institute, Icahn School of Medicine at Mount Sinai, New York, New York, USA.
Newcastle University Translational and Clinical Research Institute, Newcastle upon Tyne, UK.
School of Medicine, University of Sunderland, Sunderland, UK.

The use of coils is fundamental in interventional cardiology and can be lifesaving in selected settings. Coils are classified by their materials into bare metal, fiber coated, and hydrogel coated, or by the deliverability method into, pushable or detachable coils. Coils are delivered through microcatheters and the choice of coil size is important to ensure compatibility with the inner diameter of the delivery catheter, firstly to be able to deliver and secondly to prevent the coil from being stuck and damaged. Clinically, coils are used in either acute or in elective setting. The most important acute indication is typically the sealing coronary perforation. In the elective settings, coils can be used for the treatment of certain congenital cardiac abnormalities, aneurysms, fistulas or in the treatment of arterial side branch steal syndrome after CABG. Coils must always be delivered under fluoroscopy guidance. There are some associated complications with coils that can be acute or chronic, that nictitates regular followed-up. There is a need for education, training and regular workshops with hands-on to build the experience to use coils in situations that are infrequently encountered.

Cardiology/Cardiovascular Research
Maraj D, **Ramanan S**, **Patel PM**, **Memon M**, and **Hawes E**. Persistent Heart Failure Despite Medical Therapy Leading to a Diagnosis of Cardiac Amyloidosis. *Cureus* 2023; 15(8):e43547. PMID: 37719596. Full Text

Internal Medicine, Henry Ford Health System, Jackson, USA.
Medicine, Michigan State University, Lansing, USA.
Cardiology, Henry Ford Health System, Jackson, USA.
Cardiac Imaging, Henry Ford Health System, Jackson, USA.

Cardiac amyloidosis is restrictive cardiomyopathy, commonly classified as either light-chain amyloidosis (AL) or transthyretin amyloidosis (ATTR), which can be further subdivided into wild-type (systemic senile amyloidosis) and hereditary ATTR amyloidosis. Advanced-stage, silent, and clinically undiagnosed amyloidosis has a poor prognosis, with a survival rate of six months and up to five years. We present a 72-year-old female with a past medical history of heart failure, with preserved ejection fraction, atrial fibrillation, systemic lupus erythematosus (SLE), and stage 3b chronic kidney disease, who presented with persistent shortness of breath, lower extremity pitting edema, jugular venous distension, and dyspnea despite optimal medical therapy. The patient was diagnosed with preserved heart failure in the past and was on guideline-directed medical therapy for over five years with no history of cardiac disease in the family. The patient's previous echocardiogram revealed an ejection fraction of 65%. In order to determine the etiology of the patient's cardiomyopathy, she underwent cardiac magnetic resonance imaging (CMR), monoclonal gammopathy testing, and a Technetium pyrophosphate (99mTc-PYP) scintigraphy, of which the latter two were unrevealing. The CMR revealed increased wall thickness and multiple segments of midmyocardial to subendocardial late gadolinium enhancement, suggestive of infiltrative disease. Due to inconclusive testing, the patient underwent an endomyocardial biopsy and was determined to have wild-type, systemic senile amyloidosis, which held a poor prognosis. The patient was started on tafamidis, a new Food and Drug Administration (FDA)-approved therapy for systemic senile amyloidosis, and was discharged on the new medication, with frequent follow-up visits scheduled. Current treatment guidelines for cardiac amyloidosis include loop diuretics and spironolactone. Medications such as beta-blockers, angiotensin-converting enzyme inhibitors, and calcium channel blockers are not clinically effective. There are currently new medications on the horizon, such as tafamidis, which stabilizes the transthyretin tetramer and reduces the formation of amyloid. This case highlighted that patients who have persistent symptoms of heart failure, despite guideline-directed medical therapy, and without a history of genetic cardiac conditions, may also have a diagnosis of cardiac amyloidosis. Cardiac amyloidosis is often misdiagnosed or diagnosed late in the disease course; therefore, there is a need for increasing awareness of early diagnosis and treatment, including new FDA-approved medications for a better chance of survival.

Cardiology/Cardiovascular Research

Martens P, Burkhoff D, **Cowger JA**, Jorde UP, Kapur NK, and Tang WHW. Emerging Individualized Approaches in the Management of Acute Cardiorenal Syndrome With Renal Assist Devices. *JACC Heart Fail* 2023; Epub ahead of print. PMID: 37676211. Full Text

Kaufman Center for Heart Failure Treatment and Recovery, Department of Cardiovascular Medicine, Cleveland Clinic, Cleveland, Ohio, USA.
Cardiovascular Research Foundation, New York, New York, USA.
Division of Cardiovascular Medicine, Department of Internal Medicine, Henry Ford Hospital, Detroit, Michigan, USA.
Department of Medicine, Division of Cardiology, The Cardiovascular Center, Tufts Medical Center, Boston, Massachusetts, USA.
Montefiore-Einstein Center for Heart and Vascular Care, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, New York, USA.
Kaufman Center for Heart Failure Treatment and Recovery, Department of Cardiovascular Medicine, Cleveland Clinic, Cleveland, Ohio, USA. Electronic address: tangw@ccf.org.

Growing insights into the pathophysiology of acute cardiorenal syndrome (CRS) in acute decompensated heart failure have indicated that not every rise in creatinine is associated with adverse outcomes. Detection of persistent volume overload and diuretic resistance associated with creatinine rise may identify patients with true acute CRS. More in-depth phenotyping is needed to identify pathologic processes in renal arterial perfusion, venous outflow, and microcirculatory-interstitial-lymphatic axis alterations that can contribute to acute CRS. Recently, various novel device-based interventions designed to target different pathophysiologic components of acute CRS are in early feasibility and proof-of-concept studies. However, appropriate trial endpoints that reflect improvement in cardiorenal trajectories remain elusive and highly debated. In this review the authors describe the variety of physiological derangements leading to acute CRS and the opportunity to individualize the management of acute CRS with novel renal assist devices that can target specific components of these alterations.

Cardiology/Cardiovascular Research
Miletic K, and **Cowger JA**. Implant Center Left Ventricular Assist Device Volumes: How Many Do you Need for Your Team to Succeed? *J Card Fail* 2023; Epub ahead of print. PMID: 37661052. Full Text

Department of Cardiothoracic Surgery, Henry Ford Heart & Vascular Institute, Detroit, MI 48202.
Department of Cardiovascular Medicine, Henry Ford Heart & Vascular Institute, Detroit, MI 48202.
Electronic address: jennifercowger@gmail.com.

Cardiology/Cardiovascular Research
Rempakos A, Kostantinis S, Simsek B, Karacsonyi J, Alexandrou M, Choi JW, Poommipanit P, Khatri JJ, Young L, Davies R, Benton S, Jaffer FA, Chandwaney R, Azzalini L, **Alaswad K**, Jefferson B, Frizzell J, Abi-Rafeh N, Elguindy A, Goktekin O, Rangan BV, Mastrodemos OC, Allana SS, Sandoval Y, Burke NM, Brilakis ES, and Gorgulu S. Impact of preprocedural anemia on in-hospital and follow-up outcomes of chronic total occlusion percutaneous coronary intervention. *Catheter Cardiovasc Interv* 2023; Epub ahead of print. PMID: 37681964. Full Text

Minneapolis Heart Institute and Minneapolis Heart Institute Foundation, Abbott Northwestern Hospital, Minneapolis, Minnesota, USA.
Texas Health Presbyterian Hospital, Dallas, Texas, USA.
University Hospitals, Case Western Reserve University, Cleveland, Ohio, USA.
Cleveland Clinic, Cleveland, Ohio, USA.
WellSpan York Hospital, York, Pennsylvania, USA.
Massachusetts General Hospital, Boston, Massachusetts, USA.
Oklahoma Heart Institute, Tulsa, Oklahoma, USA.
Department of Medicine, Division of Cardiology, University of Washington, Seattle, Washington, USA.
Henry Ford Cardiovascular Division, Detroit, Michigan, USA.
Tristar Centennial Medical Center, Nashville, Tennessee, USA.
St. Vincent Hospital, Indianapolis, Indiana, USA.
North Oaks Health System, Hammond, Louisiana, USA.
Aswan Heart Center, Magdi Yacoub Foundation, Cairo, Egypt.
Memorial Bahcelievler Hospital, Istanbul, Turkey.
Biruni University Medical School, Istanbul, Turkey.

BACKGROUND: The impact of preprocedural anemia on the outcomes of chronic total occlusion (CTO) percutaneous coronary intervention (PCI) has received limited study. METHODS: We examined the clinical and angiographic characteristics and procedural outcomes of 8633 CTO PCIs performed at 39 US and non-US centers between 2012 and 2023. Anemia was defined as a hemoglobin level of <13 g/dL in men and <12 g/dL in women. RESULTS: Anemia was present in 1652 (19%) patients undergoing CTO PCI. Anemic patients had a higher incidence of comorbidities, such as diabetes mellitus, hypertension, dyslipidemia, heart failure, cerebrovascular disease, and peripheral arterial disease. CTOs in anemic patients were more likely to have complex angiographic characteristics, including smaller diameter, longer length, moderate to severe calcification, and moderate to severe proximal tortuosity. Anemic patients required longer procedure (119 vs. 107 min; $p < 0.001$) and fluoroscopy (45 vs. 40 min; $p < 0.001$) times but received similar contrast volumes. Technical success was similar between the two groups. In-hospital major adverse cardiac events (MACE) rates were higher in patients with anemia; however, this association was no longer significant after adjusting for confounding factors. Baseline anemia was independently associated with follow-up MACE (adjusted hazard ratio [HR]: 1.63; 95% confidence interval [CI]: 1.07-2.49; $p = 0.023$) and all-cause mortality (adjusted HR: 3.03; 95% CI: 1.41-6.49; $p = 0.004$). CONCLUSIONS: Preprocedural anemia is associated with more comorbidities, higher lesion complexity, longer procedure times, and higher follow-up MACE and mortality after CTO PCI.

Cardiology/Cardiovascular Research

Sandoval Y, **Basir MB**, Lemor A, Lichaa H, Alasnag M, Dupont A, Hirst C, Kearney KE, Kaki A, Smith TD, Vallabhajosyula S, Kayssi A, Firstenberg MS, and Truesdell AG. Optimal Large-Bore Femoral Access, Indwelling Device Management, and Vascular Closure for Percutaneous Mechanical Circulatory Support. *Am J Cardiol* 2023; 206:262-276. PMID: 37717476. Full Text

Minneapolis Heart Institute, Abbott Northwestern Hospital, Center for Coronary Artery Disease, Minneapolis Heart Institute Foundation, Minneapolis, Minnesota.
Division of Cardiology, Henry Ford Hospital, Detroit, Michigan.
Department of Cardiology, University of Mississippi Medical Center, Jackson, Mississippi.
Ascension Saint Thomas Heart, Ascension Saint Thomas Rutherford, Murfreesboro, Tennessee.
Cardiac Center, King Fahd Armed Forces Hospital, Jeddah, Saudi Arabia.
Northside Cardiovascular Institute, Atlanta, Georgia.
Department of Cardiology, Ascension St. John Hospital-Detroit, Detroit, Michigan.
Department of Cardiology, University of Washington, Seattle, Washington.
The Carl and Edyth Lindner Center for Research and Education at The Christ Hospital, Cincinnati, Ohio.
Section of Cardiovascular Medicine, Department of Medicine, Wake Forest University School of Medicine, Winston-Salem, North Carolina; Division of Public Health Sciences, Department of Implementation Science, Wake Forest University School of Medicine, Winston-Salem, North Carolina.
University of Toronto, Toronto, Ontario, Canada.
Northeast Ohio University, Rootstown, Ohio.
Virginia Heart/Inova Schar Heart and Vascular Institute, Falls Church, Virginia. Electronic address: atruesdell@virginiaheart.com.

Cardiology/Cardiovascular Research

Sterling LH, Fernando SM, Talarico R, Qureshi D, van Diepen S, Herridge MS, Price S, Brodie D, Fan E, Di Santo P, Jung RG, Parlow S, **Basir MB**, Scales DC, Combes A, Mathew R, Thiele H, Tanuseputro P, and Hibbert B. Long-Term Outcomes of Cardiogenic Shock Complicating Myocardial Infarction. *J Am Coll Cardiol* 2023; 82(10):985-995. PMID: 37648357. Full Text

CAPITAL Research Group, Division of Cardiology, University of Ottawa Heart Institute, Ottawa, Ontario, Canada.
CAPITAL Research Group, Division of Cardiology, University of Ottawa Heart Institute, Ottawa, Ontario, Canada; Division of Critical Care, Department of Medicine, University of Ottawa, Ottawa, Ontario, Canada; Department of Critical Care, Lakeridge Health Corporation, Oshawa, Ontario, Canada; Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Ontario, Canada. Electronic address: sfernando@qmed.ca.
Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Ontario, Canada; ICES, Toronto, Ontario, Canada.
Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Ontario, Canada; ICES, Toronto, Ontario, Canada; Bruyère Research Institute, Ottawa, Ontario, Canada.
Department of Critical Care Medicine, University of Alberta, Edmonton, Alberta, Canada; Division of Cardiology, Department of Medicine, University of Alberta, Edmonton, Alberta, Canada; VIGOUR Centre, University of Alberta, Edmonton, Alberta, Canada.
Interdepartmental Division of Critical Care Medicine, University of Toronto, Toronto, Ontario, Canada; Toronto General Hospital Research Institute, University Health Network, Toronto, Ontario, Canada; Institute of Health Policy, Management and Evaluation, Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada.
Royal Brompton & Harefield Hospitals, London, United Kingdom; National Heart and Lung Institute, Imperial College, London, United Kingdom.
Division of Pulmonary and Critical Care Medicine, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA.
CAPITAL Research Group, Division of Cardiology, University of Ottawa Heart Institute, Ottawa, Ontario, Canada; Division of Critical Care, Department of Medicine, University of Ottawa, Ottawa, Ontario, Canada.
Division of Cardiology, Henry Ford Hospital, Detroit, Michigan, USA.

ICES, Toronto, Ontario, Canada; Interdepartmental Division of Critical Care Medicine, University of Toronto, Toronto, Ontario, Canada; Department of Critical Care Medicine, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada; Li Ka Shing Knowledge Institute, St Michael's Hospital, Toronto, Ontario, Canada.
Institute of Cardiometabolism and Nutrition, Sorbonne University, Paris, France; Service de Médecine Intensive-Réanimation, Hôpitaux Universitaires Pitié Salpêtrière, Assistance Publique-Hôpitaux de Paris, Institut de Cardiologie, Paris, France.
Department of Internal Medicine/Cardiology, Heart Center Leipzig at the University of Leipzig and Leipzig Heart Institute, Leipzig, Germany.
Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Ontario, Canada; ICES, Toronto, Ontario, Canada; Bruyère Research Institute, Ottawa, Ontario, Canada; Division of Palliative Care, Department of Medicine, University of Ottawa, Ottawa, Ontario, Canada.
CAPITAL Research Group, Division of Cardiology, University of Ottawa Heart Institute, Ottawa, Ontario, Canada; Department of Cardiovascular Medicine, Mayo Clinic, Rochester, Minnesota, USA.

BACKGROUND: Cardiogenic shock secondary to acute myocardial infarction (AMI-CS) is associated with substantial short-term mortality; however, there are limited data on long-term outcomes and trends. OBJECTIVES: This study sought to examine long-term outcomes of AMI-CS patients. METHODS: This was a population-based, retrospective cohort study in Ontario, Canada of critically ill adult patients with AMI-CS who were admitted to hospitals between April 1, 2009 and March 31, 2019. Outcome data were captured using linked health administrative databases. RESULTS: A total of 9,789 consecutive patients with AMI-CS from 135 centers were included. The mean age was 70.5 ± 12.3 years, and 67.7% were male. The incidence of AMI-CS was 8.2 per 100,000 person-years, and it increased over the study period. Critical care interventions were common, with 5,422 (55.4%) undergoing invasive mechanical ventilation, 1,425 (14.6%) undergoing renal replacement therapy, and 1,484 (15.2%) receiving mechanical circulatory support. A total of 2,961 patients (30.2%) died in the hospital, and 4,004 (40.9%) died by 1 year. Mortality at 5 years was 58.9%. Small improvements in short- and long-term mortality were seen over the study period. Among survivors to discharge, 2,870 (42.0%) required increased support in care from their preadmission baseline, 3,244 (47.5%) were readmitted to the hospital within 1 year, and 1,047 (15.3%) died within 1 year. The mean number of days at home in the year following discharge was 307.9 ± 109.6. CONCLUSIONS: Short- and long-term mortality among patients with AMI-CS is high, with minimal improvement over time. AMI-CS survivors experience significant morbidity, with high risks of readmission and death. Future studies should evaluate interventions to minimize postdischarge morbidity and mortality among AMI-CS survivors.

Cardiology/Cardiovascular Research

Vasconcelos L, Martinez BP, **Kent M**, Ansari S, Ghanbari H, and Nenadic I. Multi-center atrial fibrillation electrocardiogram (ECG) classification using Fourier space convolutional neural networks (FD-CNN) and transfer learning. *J Electrocardiol* 2023; 81:201-206. PMID: 37778217. Full Text

Department of Radiology, Mayo Clinic, Rochester, MN, USA. Electronic address: vasconcelos.luiz@mayo.edu.
Department of Internal Medicine, University of Michigan, Ann Arbor, MI, USA.
Division of Cardiology, Henry Ford Hospital, Detroit, MI, USA.
Department of Emergency Medicine, University of Michigan, Ann Arbor, MI, USA.
Cardiovascular Disease, Department of Internal Medicine, University of Michigan, Ann Arbor, MI, USA.
Department of Radiology, Mayo Clinic, Rochester, MN, USA; Duke Cardiology, Duke University Medical Center, Durham, NC, USA.

There has been a proliferation of machine learning (ML) electrocardiogram (ECG) classification algorithms reaching >85% accuracy for various cardiac pathologies. Despite the high accuracy at individual institutions, challenges remain when it comes to multi-center deployment. Transfer learning (TL) is a technique in which a model trained for a specific task is repurposed for another related task, in this case ECG ML model trained at one institution is fine-tuned to be utilized to classify ECGs at another institution. Models trained at one institution, however, might not be generalizable for accurate classification when deployed broadly due to differences in type, time, and sampling rate of traditional

ECG acquisition. In this study, we evaluate the performance of time domain (TD) and frequency domain (FD) convolutional neural network (CNN) classification models in an inter-institutional scenario leveraging three different publicly available datasets. The larger PTB-XL ECG dataset was used to initially train TD and FD CNN models for atrial fibrillation (AFIB) classification. The models were then tested on two different data sets, Lobachevsky University Electrocardiography Database (LUDB) and Korea University Medical Center database (KURIAS). The FD model was able to retain most of its performance (>0.81 F1-score), whereas TD was highly affected (<0.53 F1-score) by the dataset variations, even with TL applied. The FD CNN showed superior robustness to cross-institutional variability and has potential for widespread application with no compromise to ECG classification performance.

Cardiology/Cardiovascular Research

Wilson CM, Boright L, Louie WG, Shahverdi P, Arena SK, **Benbow R**, Wilson JR, Chen Q, Rousso K, and Huang N. Effect of Robotic Delivery of Physical Activity and Fall Prevention Exercise in Older Adults: A Pilot Cohort Study. *Cureus* 2023; 15(8):e44264. PMID: 37772237. Full Text

Physical Therapy, Oakland University, Rochester, USA.
Physical Medicine and Rehabilitation, Corewell Health, Southfield, USA.
Electrical and Computer Engineering, School of Engineering and Computer Science, Oakland University, Rochester, USA.
Oncology and Cardiac Rehabilitation, Henry Ford Health System, Detroit, USA.
Human Movement Science, School of Health Sciences, Oakland University, Rochester, USA.
General Medicine, School of Medicine, Oakland University William Beaumont School of Medicine, Rochester, USA.

Introduction The high prevalence of falls, lack of stability and balance, and general physical deconditioning are concerning issues for longevity and quality of life for adults aged 65 years and older. Although supervised delivery of the Otago Exercise Program (OEP) has demonstrated evidence of effectiveness in reducing fall risk of older adults, opportunities for ongoing unsupervised exercise performance are warranted. An option to facilitate exercise and performance of health behaviors may be via a social robot. The purpose of this study was to examine feasibility and initial outcomes of a robot-delivered fall prevention exercise program for community-dwelling older adults. Methods Five participants aged 65 years and older were recruited to receive robot-delivered modified OEP and walking program three times per week for four weeks. Outcomes of demographics, self-reported performance measures (Modified Falls Self-Efficacy Scale, Activities-specific Balance Confidence, and Almere Model assessing various constructs of acceptance of use of robotic technology), and physical performance measures (Timed Up and Go Test, Short Physical Performance Battery, Balance Tracking System [BTrackS] center of pressure sway) were collected. Data were analyzed descriptively and examined for trends in change. Measures of central tendency and distribution were used according to the distribution of the data. Results The mean age of the participants was 75 years (range: 66-83 years; four females and one male). The range of participant exercise session completion was 7-12 (mode=11, n=3). Constructs on the Almere Model that started and remained positive were Attitudes Toward Technology and Perceived Enjoyment with the robot. Anxiety improved from 3.80 to 4.68, while Social Presence of the robot improved from 2.80 to 3.56. The construct of Trust was somewhat negative among participants upon commencing the program and did not substantially change over time. Two participants improved their confidence on the Activities-specific Balance Confidence scale by more than 10%, while all participants showed some improvement in confidence in their balance. Mixed results were found with the Modified Falls Self-Efficacy Scale. Mean gait speed for the participants improved by 0.76 seconds over 3 meters. Improvement was also demonstrated for the Short Physical Performance Battery, with two participants improving scores by 2-3 points out of 12. No appreciable changes were found with the Timed Up and Go test and the BTrackS assessment. Conclusion Using a robot-led exercise program is an accessible and feasible way to deliver exercise to community-dwelling older adults in the home, but some technical constraints remain. Outcomes suggest that a four-week program is sufficient to elicit some positive trends in health outcomes and has the potential to reduce fall risk.

Cardiology/Cardiovascular Research

Zordok M, Etiwy M, Abdelazeem M, Tawadaros M, Hakam L, Zaslavaskaya M, Dani SS, Pershad A, **Alaswad K**, Brilakis ES, and Megaly M. The summer effect on STEMI outcomes: Insights from teaching hospitals. *Cardiovasc Revasc Med* 2023; Epub ahead of print. PMID: 37679199. Full Text

Department of Medicine, Catholic Medical Center, Manchester, NH, United States of America.
Department of Medicine, Dartmouth Hitchcock Medical Center, Lebanon, NH, United States of America.
Department of Medicine, St. Elizabeth's Medical Center, Boston, MA, United States of America.
Department of Medicine, UAMS Baptist Health System, Little Rock, AK, United States of America.
Department of Medicine, Mayo Clinic, Jacksonville, FL, United States of America.
Division of Cardiology, Lahey Medical Center, Burlington, MA, United States of America.
Division of Cardiology, Dignity Health Chandler Regional and Mercy Gilbert Medical Center, Chandler, AZ, United States of America.
Division of Cardiology, Henry Ford Hospital, Detroit, MI, United States of America.
Minneapolis Heart Institute, Minneapolis, MN, United States of America.
Willis Knighton Heart Institute, Bossier City, LA, United States of America. Electronic address: michaelmegaly3@gmail.com.

Center for Health Policy and Health Services Research

Braciszewski JM, **Hecht LM**, Barnett NP, Moore RS, **Carlin AM**, **Haley EN**, and **Miller-Matero LR**. Preventing alcohol use post-bariatric surgery: patient perspectives on a technology-based approach. *Surg Endosc* 2023; Epub ahead of print. PMID: 37670188. Full Text

Center for Health Policy and Health Services Research, Henry Ford Health, One Ford Place, Suite 5E, Detroit, MI, 48202, USA. jbracis1@hfhs.org.
Center for Health Policy and Health Services Research, Henry Ford Health, One Ford Place, Suite 5E, Detroit, MI, 48202, USA.
Department of Behavioral and Social Sciences, Center for Alcohol and Addiction Studies, Brown University, Providence, USA.
Prevention Research Center, Pacific Institute for Research and Evaluation, Berkeley, USA.
Department of Surgery, Henry Ford Health, Detroit, USA.
Behavioral Health, Henry Ford Health, Detroit, USA.

BACKGROUND: Nearly two-thirds of patients engage in alcohol use after bariatric surgery, while a substantial number meet criteria for alcohol use disorder after their procedure. Given that pre-surgical education may not be sufficient, alternative methods of preventing post-surgical drinking are needed. We sought feedback on a proposed technology-based intervention to reduce alcohol use for individuals who have undergone bariatric surgery. METHODS: Twenty patients who consumed alcohol post-surgery completed qualitative interviews where they provided opinions on sample intervention content, delivery method, timing, and other aspects of a two-session web-based intervention followed by tailored text messaging for 6 months. Interviews were recorded, transcribed, and coded using thematic analysis principles. RESULTS: Participants strongly endorsed using technology to deliver an alcohol intervention, citing the interactivity and personal tailoring available in the proposed software. Education about the effects of post-surgical drinking and learning new coping strategies for social situations were the two most salient themes to emerge from questions about intervention content. Throughout the interviews, participants strongly highlighted the importance of measuring patient readiness to change alcohol use and matching intervention content to such motivation levels. Respondents felt that text messages could extend what they had learned, but also requested additional non-alcohol content (e.g., recipes, exercise tips). Most participants agreed that an online forum consisting of peers and professionals with whom they could ask questions and interact would be useful. CONCLUSION: Web- and text message-based interventions may be an acceptable approach to prevent alcohol use post-bariatric surgery.

Center for Health Policy and Health Services Research

Creech SK, Pearson R, Saenz JJ, **Braciszewski JM**, Riggs SA, and Taft CT. Trauma-informed parenting intervention for veterans: A preliminary uncontrolled trial of Strength at Home-Parents. *J Fam Psychol* 2023; Epub ahead of print. PMID: 37707465. Request Article

VISN 17 Center of Excellence for Research on Returning War Veterans, Central Texas Veterans Affairs Healthcare System.
Henry Ford Health.
Department of Psychology and Philosophy, Sam Houston State University.
National Center for Post Traumatic Stress Disorder, VA Boston Healthcare System.

Trauma exposure and posttraumatic stress disorder (PTSD) are highly prevalent in military and veteran populations and are associated with parenting difficulties. Unfortunately, there is a lack of accessible, trauma-informed, and evidence-based parenting support interventions within the Department of Veterans Affairs (VA). Strength at Home-Parents (SAHP) is a trauma-informed psychotherapy group that aims to improve parenting behaviors and overall parent-child and family functioning among U.S. military veterans with PTSD symptoms. SAHP was developed to maximize ease of use by VA providers and accessibility for parents. Here we report data from an uncontrolled trial of SAHP delivered using synchronous video technology in a sample of veterans using VA care (N = 53) who met the criteria for PTSD and parent-child functioning difficulties. Enrollment and retention rates met study goals and suggest feasibility and acceptability of study methods. Significant pre- to postintervention improvements were observed in measures of dysfunctional discipline, parenting stress, general family functioning, child psychosocial functioning, and parental PTSD and depression symptoms. Coupled with high satisfaction ratings, findings support further study of the intervention, including in an efficacy trial. (PsycInfo Database Record (c) 2023 APA, all rights reserved).

Center for Health Policy and Health Services Research
Llamocca EN, **Yeh HH**, **Miller-Matero LR**, **Westphal J**, **Frank CB**, Simon GE, Owen-Smith AA, Rossom RC, Lynch FL, Beck AL, Waring SC, Lu CY, Daida YG, Fontanella CA, and **Ahmedani BK**. Association Between Adverse Social Determinants of Health and Suicide Death. *Med Care* 2023; Epub ahead of print. PMID: 37708352. Full Text

Henry Ford Health, Center for Health Policy and Health Services Research.
Henry Ford Health, Behavioral Health Services.
Henry Ford Health, Department of Psychiatry, Detroit, MI.
Kaiser Permanente Washington, Health Research Institute, Seattle, WA.
Georgia State University, School of Public Health.
Kaiser Permanente Georgia, Center for Research and Evaluation, Atlanta, GA.
HealthPartners Institute, Bloomington, MN.
Kaiser Permanente Northwest, Center for Health Research, Portland, OR.
Kaiser Permanente Colorado, Institute for Health Research, Aurora, CO.
Essentia Health, Institute of Rural Health, Duluth, MN.
Harvard Medical School, Department of Population Medicine.
Harvard Pilgrim Health System, Harvard Pilgrim Health Care Institute, Boston, MA.
Kaiser Permanente Hawaii, Center for Integrated Health Research, Honolulu, HI.
Nationwide Children's Hospital, Abigail Wexner Research Institute, Center for Suicide Prevention and Research.
The Ohio State University, Department of Psychiatry and Behavioral Health, Columbus, OH.

OBJECTIVE: The aim of this study was to identify adverse social determinants of health (SDoH) International Statistical Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code prevalence among individuals who died by suicide and to examine associations between documented adverse SDoH and suicide. RESEARCH DESIGN: A case-control study using linked medical record, insurance claim, and mortality data from 2000 to 2015 obtained from 9 Mental Health Research Network-affiliated health systems. We included 3330 individuals who died by suicide and 333,000 randomly selected controls matched on index year and health system location. All individuals in the study (cases and controls) had at least 10 months of enrollment before the study index date. The index date for the study for each case and their matched controls was the suicide date for that given case. RESULTS: Adverse SDoH documentation was low; only 6.6% of cases had ≥1 documented adverse SDoH in the year before suicide. Any documented SDoH and several specific adverse SDoH categories were more

frequent among cases than controls. Any documented adverse SDoH was associated with higher suicide odds [adjusted odds ratio (aOR)=2.76; 95% CI: 2.38-3.20], as was family alcoholism/drug addiction (aOR=18.23; 95% CI: 8.54-38.92), being an abuse victim/perpetrator (aOR=2.53; 95% CI: 1.99-3.21), other primary support group problems (aOR=1.91; 95% CI: 1.32-2.75), employment/occupational maladjustment problems (aOR=8.83; 95% CI: 5.62-13.87), housing/economic problems (aOR: 6.41; 95% CI: 4.47-9.19), legal problems (aOR=27.30; 95% CI: 12.35-60.33), and other psychosocial problems (aOR=2.58; 95% CI: 1.98-3.36). CONCLUSIONS: Although documented SDoH prevalence was low, several adverse SDoH were associated with increased suicide odds, supporting calls to increase SDoH documentation in medical records. This will improve understanding of SDoH prevalence and assist in identification and intervention among individuals at high suicide risk.

Center for Health Policy and Health Services Research
Miller-Matero LR, **Yeh HH**, **Ahmedani BK**, Rossom RC, Harry ML, Daida YG, and Coleman KJ. Suicide attempts after bariatric surgery: comparison to a nonsurgical cohort of individuals with severe obesity. *Surg Obes Relat Dis* 2023; Epub ahead of print. PMID: 37758538. Full Text

Behavioral Health, Henry Ford Health, Detroit, Michigan; Center for Health Policy and Health Services Research, Henry Ford Health, Detroit, Michigan. Electronic address: Lmatero1@hfhs.org.
Center for Health Policy and Health Services Research, Henry Ford Health, Detroit, Michigan.
Behavioral Health, Henry Ford Health, Detroit, Michigan; Center for Health Policy and Health Services Research, Henry Ford Health, Detroit, Michigan.
HealthPartners Institute, Bloomington, Minnesota.
Essentia Institute of Rural Health, Duluth, Minnesota.
Kaiser Permanente Hawaii, Honolulu, Hawaii.
Kaiser Permanente Southern California, Irvine, California; Kaiser Permanente Bernard J. Tyson School of Medicine, Pasadena, California.

BACKGROUND: The rate of suicide is higher among individuals following bariatric surgery compared with the general population; however, it is not clear whether risk is associated with bariatric surgery beyond having severe obesity. OBJECTIVE: To compare the risk of a suicide attempt among those who had bariatric surgery versus a nonsurgical cohort with severe obesity. SETTING: Aggregate count data were collected from 5 healthcare systems. METHODS: Individuals were identified in the surgical cohort if they underwent bariatric surgery between 2009 and 2017 (n = 35,522) and then were compared with a cohort of individuals with severe obesity who never had bariatric surgery (n = 691,752). Suicide attempts were identified after study enrollment date using International Classification of Diseases, Ninth and Tenth Editions (ICD-9 and ICD-10) diagnosis codes from 2009 to 2021. RESULTS: The relative risk of a suicide attempt was 64% higher in the cohort with bariatric surgery than that of the nonsurgical cohort (2.2% versus 1.3%; relative risk = 1.64; 95% CI, 1.53-1.76). Within the cohort with bariatric surgery, suicide attempts were more common among the 18- to 39-year age group (P < .001), women (P = .002), Hawaiian-Pacific Islanders (P < .001), those with Medicaid insurance (P < .001), and those with a documented mental health condition at baseline (in the previous 2 years; P < .001). CONCLUSIONS: The relative risk of suicide attempts was higher among those who underwent bariatric surgery compared with a nonsurgical cohort, though absolute risk remained low. Providers should be aware of this increased risk. Screening for suicide risk after bariatric surgery may be useful to identify high-risk individuals.

Center for Health Policy and Health Services Research
Shuman CJ, Morgan M, and **Vance A**. Integrating Neonatal Intensive Care Into a Family Birth Center: Describing the Integrated NICU (I-NIC). *J Perinat Neonatal Nurs* 2023; Epub ahead of print. PMID: 37773333. Full Text

Department of Systems, Populations, and Leadership, University of Michigan, Ann Arbor (Dr Shuman and Ms Morgan); and Center for Health Policy & Health Services Research, Henry Ford Health, Detroit, Michigan (Dr Vance).

BACKGROUND: Parent-infant separation resulting from admission to a neonatal intensive care unit (NICU) is often reported as the most challenging and distressing experience for parents. Aiming to

mitigate the stress of parent-infant separation, a new neonatal care model was designed to integrate NIC with delivery and postpartum care. Yet, little is known about the model and its implementation. METHODS: Using a qualitative descriptive design with field observations, we describe the characteristics of an integrated-neonatal intensive care (I-NIC) model and examined perceptions of clinical staff (n = 8) and parents (n = 3). RESULTS: The physical layout of the I-NIC rooms required additional oxygen and suction columns and new signage to specify them as NICU-equipped. Other NICU-related equipment was mobile, thus moved into rooms when necessary. Nurses were cross-trained in labor/delivery, postpartum, neonatal care; however, nurses primarily worked within their specific area of expertise. Clinician and parent perceptions of the model were notably positive, reporting decreased anxiety related to separation, increased ability for chest feeding and skin-to-skin care, and improved interdisciplinary care. CONCLUSION: Future work is needed to understand implementation of the model in other settings, with specific attention to unit architecture, level of NICU care services, patient census, and staff and patient outcomes.

Center for Health Policy and Health Services Research
Vance AJ, Farmer ML, D'Agata A, Moore T, Esser M, and Fortney CA. NANN Membership Recommendations: Opportunities to Advance Racial Equity Within the Organization. *Adv Neonatal Care* 2023; Epub ahead of print. PMID: 37703135. Full Text

Henry Ford Health, Detroit, Michigan (Dr Vance); Marietta Neonatology, Marietta, Georgia (Dr Farmer); The Univeristy of Rhode Island College of Nursing, Kingston, Rhode Island (Dr D'Agata); Univeristy of Nebraska Medical Center College of Nursing, Omaha, Nebraska (Dr Moore); Alverno College School of Nursing and Health Professions, Milwaukee, Wisconsin (Dr Esser); and The Ohio State University College of Nursing, Columbus, Ohio (Dr Fortney).

BACKGROUND: Neonatal care has advanced significantly in recent years, yet racial health inequities persist in the neonatal intensive care unit (NICU), with infants from racial and ethnic minority groups less likely to receive recommended treatment. Healthcare providers acknowledge that there are steps that can be taken to increase knowledge and awareness regarding health inequities. PURPOSE: To better understand current health equity-related initiatives in the neonatal community and solicit feedback from National Association of Neonatal Nurses (NANN) membership about advancing racial equity within the organization. METHODS: A cross-sectional survey was conducted in January 2021. The anonymous, onetime survey was distributed to active NANN members via SurveyMonkey and included questions related to racial equity initiatives, recommendations, and demographics. Data analysis was conducted using an exploratory approach using descriptive statistics, and thematic analysis was used to summarize responses to open-ended questions. RESULTS: There were 325 members who completed the full survey, of whom were White (83%), female (96%), staff nurses (42%), and those with more than 16 years of experience (69%), and most (69%) were familiar with NANN's racial equity position statement. Recommendations were summarized into the following themes: (1) research, (2) education, (3) workforce diversity, (4) communication, (5) scholarships, (6) resources, and (7) community outreach. IMPLICATIONS FOR PRACTICE AND RESEARCH: NANN members offered clear and actionable recommendations to advance health equity within the neonatal community and organization, which included offering more diversity, inclusion, and equity education at the annual conferences, in ANC articles, and newsletters, and the creation of scholarships or reduced membership fees to encourage diverse enrollment in the organization.

Center for Health Policy and Health Services Research
Vanderziel A, Anthony JC, Barondess D, Kerver JM, and Alshaarawy O. Nausea and Vomiting of Pregnancy and Prenatal Cannabis Use in a Michigan Sample. *Am J Obstet Gynecol MFM* 2023; 101171. Epub ahead of print. PMID: 37778699. Request Article

Center for Health Policy & Health Services Research, Henry Ford Health, Detroit, Michigan; Department of Family Medicine, College of Human Medicine, Michigan State University, East Lansing, Michigan; Department of Epidemiology and Biostatistics, College of Human Medicine, Michigan State University, East Lansing, Michigan. Electronic address: avande10@hfhs.org.

Department of Epidemiology and Biostatistics, College of Human Medicine, Michigan State University, East Lansing, Michigan.
Department of Family Medicine, College of Human Medicine, Michigan State University, East Lansing, Michigan.

BACKGROUND: Nausea and vomiting of pregnancy, also referred to as morning sickness, affects over 70% of all pregnancies. Symptoms range from mild to severe and in some cases can be debilitating, resulting in a reduced quality of life. Moreover, prenatal cannabis use prevalence has doubled in the United States, while cannabis potency, measured by concentration of delta-9-tetrahydrocannabiniol, has increased from 10% in 2009 to 14% in 2019. State-level recreational legalization of cannabis may contribute to the liberalization of its use as well as a reduced risk perception. Further, the relatively recent discovery of cannabinoid hyperemesis syndrome may contribute to the mischaracterization of morning sickness in individuals who use cannabis during pregnancy. Though cannabis has well-documented antiemetic properties, there is insufficient research on the topic. Therefore, it is essential to establish a tangible understanding of the association between nausea and vomiting of pregnancy and prenatal cannabis use. OBJECTIVE: To estimate the degree to which nausea and vomiting of pregnancy might be associated with prenatal cannabis use in a sample of pregnant people in Michigan, a state where recreational cannabis use became legal in December 2018. STUDY DESIGN: A prospective study of participants from the Michigan Archive for Research on Child Health, a population-based pregnancy cohort recruited using a probability-based sampling approach. Participants were recruited from 22 prenatal clinics located throughout Michigan's lower peninsula. Cross-sectional analyses were performed for data available between October 2017 and January 2022. RESULTS: Among this sample of Michigan pregnant people, 14% (95% CI: 11-16%) reported cannabis use. Participants who experienced increasing morning sickness severity had higher odds of using cannabis (OR(adjusted)= 1.2; 95% CI: 1.1, 1.2). When the sample was restricted to first trimester morning sickness and cannabis use, results remained statistically robust. When the direction of the association was reversed, we detected an increase in morning sickness severity among participants who used cannabis during pregnancy (ß(adjusted)= 0.2; 95% CI: 0.1, 0.2). Lastly, we investigated the association between pre-pregnancy cannabis use and first trimester morning sickness. Findings suggest an increase in morning sickness severity among people who used cannabis in the three months prior to pregnancy compared to those who did not (ß(adjusted)= 0.1; 95% CI: 0.003, 0.2) CONCLUSIONS: Findings from this study indicate a link between nausea and vomiting of pregnancy and prenatal cannabis use. This study also revealed that using cannabis in the three months prior to pregnancy is associated with first trimester morning sickness severity. The strengths of our study contribute to the scant epidemiological evidence in this area of research. More fine-grained, time-specific data on nausea and vomiting of pregnancy and prenatal cannabis use are necessary to draw inferences about cause-effect relationships. Our study might provide a basis to discourage cannabis use during pregnancy until more evidence is compiled.

Center for Health Policy and Health Services Research
Yarborough BJH, Stumbo SP, Coleman MJ, Ling Grant DS, Hulsey J, Shaw JL, **Ahmedani BK**, Bruschke C, Carson CPA, Cooper R, Firemark A, Hulst D, Massimino S, **Miller-Matero LR**, Swanson JR, Leonard A, **Westphal J**, and Coleman KJ. Suicide-related care among patients who have experienced an opioid-involved overdose. *Gen Hosp Psychiatry* 2023; 85:8-18. PMID: 37717389. Full Text

Center for Health Research, Kaiser Permanente Northwest, Portland, OR, USA.
American Foundation for Suicide Prevention, New York, NY, USA.
Department of Research and Evaluation, Kaiser Permanente Southern California, Pasadena, CA, USA.
Addiction Policy Forum, Bethesda, MD, USA.
Southcentral Foundation, Anchorage, AK, USA.
Center for Health Policy & Health Services Research, Henry Ford Health, Detroit, MI, USA.
Kaiser Permanente, National Mental Health and Wellness, Oakland, CA, USA.
Mental Health America, Alexandria, VA, USA.
Shatterproof, National Stigma Initiative, Madison, WI, USA.
Depression and Bipolar Support Alliance, Chicago, IL, USA.
Kaiser Foundation Health Plan, Ethics and Compliance, Care Delivery & Quality Compliance, Pasadena, CA, USA.

Department of Research and Evaluation, Kaiser Permanente Southern California, Pasadena, CA, USA. Electronic address: Karen.J.Coleman@kp.org.

OBJECTIVE: Our objective was to describe suicide prevention care for individuals prescribed opioids or with opioid use disorder (OUD) and identify opportunities for improving this care. METHODS: Adult patients (n = 65) from four health systems with an opioid-involved overdose and clinicians (n = 21) who had contact with similar patients completed 30-60-min semi-structured interviews. A community advisory board contributed to development of all procedures, and interpretation and summary of findings. RESULTS: Patients were mostly female (59%), White (63%) and non-Hispanic (77%); 52 were prescribed opioids, 49% had diagnosed OUD, and 42% experienced an intentional opioid-involved overdose. Findings included: 1) when prescribed an opioid or treated for OUD, suicide risks were typically not discussed; 2) 35% of those with an intentional opioid-involved overdose and over 80% with an unintentional overdose reported no discussion of suicidal ideation when treated for the overdose; and 3) suicide-related follow-up care was uncommon among those with unintentional overdoses despite suicidal ideation being reported by >20%. Clinicians reported that when prescribing opioids or treating OUD, post-overdose suicide-related screening or counseling was not done routinely. CONCLUSIONS: There were several opportunities to tailor suicide prevention care for patients who were treated for opioid-involved overdoses within health systems.

Center for Individualized and Genomic Medicine Research

Gui H, Tang WHW, Francke S, **Li J**, **She R**, Bazeley P, Pereira NL, Adams K, **Luzum JA**, Connolly TM, Hernandez AF, McNaughton CD, **Williams LK**, and **Lanfear DE**. Common Variants on FGD5 Increase Hazard of Mortality or Rehospitalization in Patients With Heart Failure From the ASCEND-HF Trial. *Circ Heart Fail* 2023; 16(9):e010438. PMID: 37725680. Full Text

Center for Individualized and Genomics Medicine Research (H.G., J.A.L., L.K.W., D.E.L.), Henry Ford Hospital, Detroit, MI.
Department of Cardiovascular Medicine, Cleveland Clinic, OH (W.H.W.T., P.B.).
Cary, NC (S.F.).
Department of Public Health Science (J.L., R.S.), Henry Ford Hospital, Detroit, MI.
Department of Cardiovascular Medicine, Mayo Clinic, Rochester, MN (N.L.P.).
Department of Medicine, University of North Carolina, Chapel Hill (K.A.).
Department of Clinical Pharmacy, University of Michigan, Ann Arbor (J.A.L.).
Lansdale, PA, previously Janssen Research & Development LLC, Spring House, PA (T.M.C.).
Duke Clinical Research Institute, Durham, NC (A.F.H.).
Department of Emergency Medicine, Vanderbilt University Medical Center, Nashville, TN (C.D.M.).
Heart and Vascular Institute (D.E.L.), Henry Ford Hospital, Detroit, MI.

BACKGROUND: Heart failure remains a global health burden, and patients hospitalized are particularly at risk, but genetic associates for subsequent death or rehospitalization are still lacking. METHODS: The genetic substudy of the ASCEND-HF trial (Acute Study of Clinical Effectiveness of Nesiritide in Decompensated Heart Failure) was used to perform genome-wide association study and transethnic meta-analysis. The overall trial included the patients of self-reported European ancestry (n=2173) and African ancestry (n=507). The end point was death or heart failure rehospitalization within 180 days. Cox models adjusted for 11 a priori predictors of rehospitalization and 5 genetic principal components were used to test the association between single-nucleotide polymorphisms and outcome. Summary statistics from the 2 populations were combined via meta-analysis with the significance threshold considered P<5×10(-)(8). RESULTS: Common variants (rs2342882 and rs35850039 in complete linkage disequilibrium) located in FGD5 were significantly associated with the primary outcome in both ancestry groups (European Americans: hazard ratio [HR], 1.38; P=2.42×10(-6); African ancestry: HR, 1.51; P=4.43×10(-)(3); HR in meta-analysis, 1.41; P=4.25×10(-8)). FGD5 encodes a regulator of VEGF (vascular endothelial growth factor)-mediated angiogenesis, and in silico investigation revealed several previous genome-wide association study hits in this gene, among which rs748431 was associated with our outcome (HR, 1.20; meta P<0.01). Sensitivity analysis proved FGD5 common variants survival association did not appear to operate via coronary artery disease or nesiritide treatment (P>0.05); and the signal was still significant when changing the censoring time from 180 to 30 days (HR, 1.39; P=1.59×10(-

5)). CONCLUSIONS: In this multiethnic genome-wide association study of ASCEND-HF, single-nucleotide polymorphisms in FGD5 were associated with increased risk of death or rehospitalization. Additional investigation is required to examine biological mechanisms and whether FGD5 could be a therapeutic target. REGISTRATION: URL: https://www. CLINICALTRIALS: gov; Unique identifier: NCT00475852.

Dermatology

Desai SR, Alexis AF, Elbuluk N, Grimes PE, Weiss J, **Hamzavi IH**, and Taylor SC. Best Practices in the Treatment of Melasma with a Focus on Patients with Skin of Color. *J Am Acad Dermatol* 2023; Epub ahead of print. PMID: 37748556. Full Text

The University of Texas Southwestern Medical Center, Dallas, Texas; Innovative Dermatology, Plano, Texas. Electronic address: seemald@yahoo.com.
Department of Dermatology, Weill Cornell Medicine, New York, New York.
Department of Dermatology, Keck School of Medicine Dermatology, University of South California, Los Angeles, California.
Division of Dermatology, Vitiligo & Pigmentation Institute of Southern California, David Geffen School of Medicine, University of California, Los Angeles, California.
Emory University School of Medicine, Atlanta, Georgia.
Department of Dermatology, Henry Ford Hospital; Hamzavi Dermatology/ Dermatology Specialists, Detroit, Michigan.
Department of Dermatology, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania.

BACKGROUND: Melasma is a chronic hypermelanosis of the skin that affects roughly one percent of the global population, predominantly affects women, and is more prevalent in skin of color.(1,2) Melasma is a common driver for patients with skin of color to seek out a dermatologist for treatment, and ensuring the right approach for these patients is important as some treatments may be associated with adverse side effects.(3) Due to the chronicity of the disease and established psychosocial and emotional impacts, there is a large need to ensure care follows the best available evidence on the treatment of patients with melasma.(1) OBJECTIVE: Here we summarize current available topical treatments for melasma with considerations dermatologists should have for their patients with skin of color. METHODS: Steering committee consensus on clinical best practices. RESULTS: We describe a flexible and focused treatment algorithm that reflects both treatment and maintenance periods that is a consensus of our extensive clinical experience. LIMITATIONS: Use of real-world evidence; potential for individual practice bias. CONCLUSION: Melasma can be challenging to treat, particularly in patients with skin of color, and our recommendations for best practices for patients in the US is an important step toward standardizing care.

Dermatology

Desai SR, **Stein Gold L**, Cameron MC, Golant A, Lewitt GM, Bruno MJ, Martin G, Brown PM, Rubenstein DS, Butners V, and Tallman AM. Tapinarof Cream 1% Once Daily for the Treatment of Plaque Psoriasis: Case Photography of Clinical Outcomes from Three Phase 3 Trials. *Dermatol Ther (Heidelb)* 2023; 13(10):2443-2460. PMID: 37697121. Full Text

Department of Dermatology, The University of Texas Southwestern Medical Center, 5939 Harry Hines Blvd 4th Floor, Suite 100, Dallas, TX, USA. seemald@yahoo.com.
Innovative Dermatology, Plano, TX, USA. seemald@yahoo.com.
Henry Ford Health System, Detroit, MI, USA.
Cameron Dermatology, New York, NY, USA.
Icahn School of Medicine at Mount Sinai, New York, NY, USA.
Illinois Dermatology Institute, Chicago, IL, USA.
Dermatology & Skin Cancer Surgery Center, Allen, TX, USA.
George Martin Dermatology Associates, Kihei, HI, USA.
Dermavant Sciences, Inc., Morrisville, NC, USA.

Tapinarof cream 1% (VTAMA(®); Dermavant Sciences, Inc.) is a non-steroidal, topical, aryl hydrocarbon receptor agonist approved by the US Food and Drug Administration (FDA) to treat plaque psoriasis in adults and under investigation for the treatment of psoriasis in children down to 2 years of age, and for atopic dermatitis in adults and children down to 2 years of age. The PSOARING phase 3 clinical trial program evaluated tapinarof cream 1% once daily (QD) in adults with mild to severe plaque psoriasis for up to 52 weeks (NCT03956355, NCT03983980, NCT04053387). Here we present case photography documenting outcomes in the PSOARING trials. Cases illustrate various outcomes across different body areas, including responses meeting the formal FDA-mandated regulatory endpoint of a Physician Global Assessment (PGA) score of 0 (clear) or 1 (almost clear) and a decrease of at least 2 points from baseline at week 12, meaningful clinical improvement not meeting this formal endpoint, patient-reported outcomes, and pre-specified adverse events of special interest (AESIs). Tapinarof cream 1% QD demonstrated rapid and highly statistically significant efficacy, with improvements in disease activity and quality of life. In addition, a high rate (40.9%; n = 312/763) of complete disease clearance (PGA = 0) was achieved, and improvements exceeding National Psoriasis Foundation treatment goals were demonstrated. After first achieving complete disease clearance (PGA = 0), patients treated with tapinarof experienced an approximately 4-month remittive effect off therapy. Incidence and severity of folliculitis and contact dermatitis AESIs were generally mild or moderate, localized to the site of application, and associated with low discontinuation rates. Medical images are of importance in trials of dermatologic therapies to inform clinical decision-making and enhance patient assessment. Tapinarof cream 1% QD is efficacious and well tolerated in patients with mild to severe plaque psoriasis, with clinically relevant improvements seen early in the course of treatment.Clinicaltrials.gov numbers: NCT03956355, NCT03983980, NCT04053387.

Dermatology
Eleftheriadou V, **Hamzavi I**, Bae JM, and Ezzedine K. Roadmap to VIRTUAL GLOBAL: coordinating VItiligo RegisTries for adUlts And chiLdren internationally. *Br J Dermatol* 2023; Epub ahead of print. PMID: 37672669. Full Text

Dermatology, New Cross Hospital, Royal Wolverhampton NHS Trust, Wolverhampton, UK.
Department of Dermatology, Henry Ford Health, Detroit, USA.
Department of Dermatology, St. Vincent's Hospital College of Medicine, The Catholic University of Korea, Korea.
Department of Dermatology, Université Paris-Est Créteil Val de Marne, Hôpital Henri Mondor, France.

Dermatology
Grayson C, and Heath C. Special considerations in adolescents of color with acne and textured hair. *Pediatr Dermatol* 2023; Epub ahead of print. PMID: 37775997. Full Text

Department of Dermatology, Henry Ford Health, Detroit, Michigan, USA.
Lewis Katz School of Medicine, Department of Dermatology, Temple University, Philadelphia, Pennsylvania, USA.

Acne is a common dermatologic condition that affects most adolescents. In adolescents of color with textured hair, it is paramount to consider how hair care practices may affect acne distribution and treatment. Dermatologists should be familiar with hair care cultural norms when treating this population.

Dermatology
Kwa M, Guttentag A, Chase L, van Meijgaard J, and **Lim HW**. Trends In Price for Topical Corticosteroids from 2017-2021 and the Opportunity for Cost Savings Identifiable at the Point of Care: a retrospective cross-sectional study. *J Am Acad Dermatol* 2023; Epub ahead of print. PMID: 37730020. Full Text

Department of Dermatology, Henry Ford Health, Detroit MI.
GoodRx, Santa Monica, CA.
Department of Dermatology, Henry Ford Health, Detroit MI. Electronic address: hlim1@hfhs.org.

BACKGROUND: Topical corticosteroids possess numerous generics and similar-strength substitutes. Affordability can impact obtaining the medication prescribed. OBJECTIVE: To determine recent trends in

topical corticosteroid pricing and potential for cost saving. METHODS: A retrospective cross-sectional study analyzing all prescriptions dispensed for topical corticosteroids from January 1, 2017 through December 31, 2021, using a U.S. all-payer pharmacy-claims database and commercial coupon dataset, was performed. RESULTS: 237 unique drug products (> 1 claim) were identified. Factors that predicted for higher cost ($p<0.05$) were branded products (105% more expensive than generics) and ultrapotent class (55% more expensive than low potency) while ointments predicted for lower cost (19% less expensive than creams). Cash prices remained relatively stable, except for ultrapotent branded topical corticosteroids (63% increase). Cost savings were available for both brand-to-generic ($14.75 per unit) and generic-to-generic ($6.82 per unit) switching. Coupon prices were consistently lower than cash prices ($r=0.89$). LIMITATIONS: Contracted rates through insurance plans were not included. CONCLUSIONS: Topical corticosteroid prices over the past five years have stabilized, the exception being branded ultrapotent corticosteroids. Savings from switching among similar-strength substitutes remain significant despite price stabilization. Coupon prices mirror the hierarchy of cash prices and can help assess real-time costs.

Dermatology
Lim HW, and Schwarz T. Farewell Herbert Hönigsmann (1946-2023). *J Invest Dermatol* 2023; Epub ahead of print. PMID: 37777936. Request Article

Department of Dermatology, Henry Ford Health, Detroit, Michigan, USA.
Department of Dermatology and Allergology, Kiel University, Kiel University, Kiel, Germany.

Dermatology
Mastacouris N, Tannenbaum R, Strunk A, Koptyev J, Aarts P, Alhusayen R, Bechara FG, Benhadou F, Bettoli V, Brassard A, Brown D, Choon SE, Coutts P, da Silva DLF, Daveluy S, Dellavalle RP, Del Marmol V, Emtestam L, Gebauer K, George R, Giamarellos-Bourboulis EJ, Goldfarb N, **Hamzavi I**, Hazen PG, Horváth B, Hsiao J, Ingram JR, Jemec GBE, Kirby JS, Lowes MA, Marzano AV, Matusiak L, Naik HB, Okun MM, Oon HH, Orenstein LAV, Paek SY, Pascual JC, Fernandez-Peñas P, Resnik BI, Sayed CJ, Thorlacius L, van der Zee HH, van Straalen KR, and Garg A. Outcome Measures for the Evaluation of Treatment Response in Hidradenitis Suppurativa for Clinical Practice: A HiSTORIC Consensus Statement. *JAMA Dermatol* 2023; Epub ahead of print. PMID: 37755725. Full Text

Northwell Health, New Hyde Park, New York.
Department of Dermatology, Erasmus University Medical Center, Rotterdam, the Netherlands.
Sunnybrook Research Institute, Division of Dermatology, University of Toronto, Toronto, Ontario, Canada.
Department of Dermatology, Venereology and Allergology, Ruhr-University, Bochum, Germany.
Department of Dermatology, Hôpital Universitaire de Bruxelles, CUB Hôpital Erasme, Université libre de Bruxelles, Brussels, Belgium.
Department of Medical Sciences, O.U. of Dermatology, Azienda Ospedaliera, University of Ferrara, Ferrara, Italy.
University of California, Davis, Sacramento, California.
Medical Dermatology, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom.
Hospital Sultanah Aminah and Clinical School Johor Bahru, Monash University Malaysia, Johor Bahru, Malaysia.
Independent Consultant.
University Santo Amaro, São Paulo, Brazil.
Department of Dermatology, Wayne State University, Detroit, Michigan.
Department of Dermatology, University of Colorado Anschutz School of Medicine, Aurora, Colorado.
Dermatology Service, Eastern Colorado Health Care System, US Department of Veterans Affairs, Aurora, Colorado.
Department of Dermatology, Erasme Hospital, Universite Libre de Bruxelles, Brussels, Belgium.
Section of Infectious Diseases and Dermatology, Department of Medicine Huddinge, Karolinska Institutet, Stockholm, Sweden.
University of Western Australia, Perth, Western Australia, Australia.
Department of Surgery, University of Toronto, Toronto, Ontario, Canada.
Department of Internal Medicine, National and Kapodistrian University of Athens, Athens, Greece.

Departments of Medicine and Dermatology, University of Minnesota, Minneapolis, Minnesota.
Department of Dermatology, Henry Ford Health System, Detroit, Michigan.
Case-Western Reserve University School of Medicine, Cleveland, Ohio.
Department of Dermatology, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands.
Department of Dermatology, University of Southern California, Los Angeles.
Division of Infection and Immunity, Cardiff University, Cardiff, United Kingdom.
Department of Dermatology, Zealand University Hospital, Roskilde, Denmark.
Penn State Health Milton S. Hershey Medical Center, Hershey, Pennsylvania.
The Rockefeller University, New York, New York.
Dermatology Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy.
Department of Dermatology, Venereology and Allergology, Wroclaw Medical University, Wroclaw, Poland.
Department of Dermatology, University of California, San Francisco.
Fort HealthCare, Fort Atkinson, Wisconsin.
National Skin Centre, Singapore, Singapore City, Singapore.
Lee Kong Chian School of Medicine, Singapore City, Singapore.
Department of Dermatology, Emory University School of Medicine, Atlanta, Georgia.
Baylor University Medical Center, Dallas, Texas A&M University School of Medicine, Dallas.
Dermatology Department, Alicante University General Hospital, Alicante Institute for Health and Biomedical Research, Alicante, Spain.
Department of Dermatology, Westmead Hospital, The University of Sydney, Westmead, New South Wales, Australia.
Phillip Frost Department of Dermatology and Cutaneous Surgery, University of Miami Miller School of Medicine, Miami, Florida.
Department of Dermatology, University of North Carolina School of Medicine, Chapel Hill.

IMPORTANCE: Although several clinician- and patient-reported outcome measures have been developed for trials in hidradenitis suppurativa (HS), there is currently no consensus on which measures are best suited for use in clinical practice. Identifying validated and feasible measures applicable to the practice setting has the potential to optimize treatment strategies and generate generalizable evidence that may inform treatment guidelines. OBJECTIVE: To establish consensus on a core set of clinician- and patient-reported outcome measures recommended for use in clinical practice and to establish the appropriate interval within which these measures should be applied. EVIDENCE REVIEW: Clinician- and patient-reported HS measures and studies describing their psychometric properties were identified through literature reviews. Identified measures comprised an item reduction survey and subsequent electronic Delphi (e-Delphi) consensus rounds. In each consensus round, a summary of outcome measure components and scoring methods was provided to participants. Experts were provided with feasibility characteristics of clinician measures to aid selection. Consensus was achieved if at least 67% of respondents agreed with use of a measure in clinical practice. FINDINGS: Among HS experts, response rates for item reduction, e-Delphi round 1, and e-Delphi round 2 surveys were 76.4% (42 of 55), 90.5% (38 of 42), and 92.9% (39 of 42), respectively; among patient research partners (PRPs), response rates were 70.8% (17 of 24), 100% (17 of 17), and 82.4% (14 of 17), respectively. The majority of experts across rounds were practicing dermatologists with 18 to 19 years of clinical experience. In the final e-Delphi round, most PRPs were female (12 [85.7%] vs 2 males [11.8%]) and aged 30 to 49 years. In the final e-Delphi round, HS experts and PRPs agreed with the use of the HS Investigator Global Assessment (28 [71.8%]) and HS Quality of Life score (13 [92.9%]), respectively. The most expert-preferred assessment interval in which to apply these measures was 3 months (27 [69.2%]). CONCLUSIONS AND RELEVANCE: An international group of HS experts and PRPs achieved consensus on a core set of HS measures suitable for use in clinical practice. Consistent use of these measures may lead to more accurate assessments of HS disease activity and life outcomes, facilitating shared treatment decision-making in the practice setting.

Dermatology

Owji S, Teklehaimanot F, **Maghfour J**, and **Lim HW**. Properties and safety of topical dihydroxyacetone in sunless tanning products: A review. *Photodermatol Photoimmunol Photomed* 2023; Epub ahead of print. PMID: 37697919. Full Text

Transitional Residency Program, John Peter Smith Hospital, Fort Worth, Texas, USA.
Transitional Residency Program, McLaren Oakland Hospital, Pontiac, Michigan, USA.
The Henry W. Lim Division of Photobiology and Photomedicine, Department of Dermatology, Henry Ford Health, Detroit, Michigan, USA.

Sunless tanning products have risen in popularity as the desire for a tanned appearance continues alongside growing concerns about the deleterious effects of ultraviolet radiation exposure from the sun. Dihydroxyacetone (DHA) is a simple carbohydrate found nearly universally in sunless tanning products that serves to impart color to the skin. The Food and Drug Administration (FDA), which regulates sunless tanning products as cosmetics, allows DHA for external use while maintaining that its ingestion, inhalation, or contact with mucosal surfaces should be avoided. Given its widespread use and a paucity of reviews on its safety, we aim to review the literature on the topical properties and safety profile of DHA. Available data indicate that DHA possesses only minimal to no observable photoprotective properties. In vitro studies suggest that, while DHA concentrations much higher than those in sunless tanning products are needed to induce significant cytotoxicity, even low millimolar, nonlethal concentrations can alter the function of keratinocytes, tracheobronchial cells, and other cell types on a cellular and molecular level. Instances of irritant and allergic contact dermatitis triggered by DHA exposures have also been reported. While no other side effects in humans have been observed, additional studies on the safety and toxicity of DHA in humans are warranted, with a focus on concentrations and frequencies of DHA exposure typically encountered by consumers.

Dermatology

Seneschal J, Speeckaert R, Taïeb A, Wolkerstorfer A, Passeron T, Pandya AG, **Lim HW**, Ezzedine K, Zhou Y, Xiang F, Thng S, Tanemura A, Suzuki T, Rosmarin D, Rodrigues M, Raboobee N, Pliszewski G, Parsad D, Oiso N, Monteiro P, Meurant JM, Maquignon N, Lui H, Le Poole C, Leone G, Lee AY, Lan E, Katayama I, Huggins R, Oh SH, Harris JE, Hamzavi IH, Gupta S, Grimes P, Goh BK, Ghia D, Esmat S, Eleftheriadou V, Böhm M, Benzekri L, Bekkenk M, Bae JM, Alomar A, Abdallah M, Picardo M, and van Geel N. Worldwide expert recommendations for the diagnosis and management of vitiligo: Position statement from the international Vitiligo Task Force-Part 2: Specific treatment recommendations. *J Eur Acad Dermatol Venereol* 2023; Epub ahead of print. PMID: 37715487. Full Text

Department of Dermatology and Pediatric Dermatology, National Reference Center for Rare Skin Disorders, Hospital Saint-André, ImmunoConcept, CNRS UMR 5164, Bordeaux University, Bordeaux, France.
Department of Dermatology, Ghent University Hospital, Ghent, Belgium.
Department of Dermatology and Pediatric Dermatology, National Reference Center for Rare Skin Disorders, Hospital Saint-André, BRIC, UMR 1312, Inserm, University Bordeaux, Bordeaux, France.
Department of Dermatology, Netherlands Institute for Pigment Disorders, Amsterdam University Medical Centers, Amsterdam Institute for Infection and Immunity, University of Amsterdam, Amsterdam, The Netherlands.
Department of Dermatology, University Hospital of Nice, Nice, France.
Department of Dermatology, The University of Texas Southwestern Medical Center, Dallas, Texas, USA.
Department of Dermatology, Henry Ford Health, Detroit, Michigan, USA.
Department of Dermatology, University Hospital Henri Mondor, EpiDermE EA 7379, Université Paris-Est Créteil Val de Marne, Créteil, France.
Department of Dermatology and Skin Science, University of British Columbia, Vancouver, British Columbia, Canada.
Department of Dermatology, Huashan Hospital, Fudan University, Shanghai, China.
Skin Research Institute of Singapore, ASTAR, Singapore, Singapore.
Department of Dermatology Integrated Medicine, Osaka University Graduate School of Medicine, Osaka, Japan.
Department of Dermatology, Yamagata University Faculty of Medicine, Yamagata, Japan.
Department of Dermatology, Tufts University School of Medicine, Boston, Massachusetts, USA.
Chroma Dermatology, Pigment and Skin of Colour Centre, Wheelers Hill, Victoria, Australia.
Department of Dermatology, The Royal Children's Hospital, Parkville, Victoria, Australia.

Department of Dermatology, Westville Hospital, Durban, South Africa.
Deutscher Vitiligo-Bund e.V., Adelsdorf, Germany.
Department of Dermatology, Venereology & Leprology, Postgraduate Institute of Medical Education and Research, Chandigarh, India.
Department of Dermatology, Kindai University Nara Hospital, Ikoma, Japan.
Vitiligo.nl, The Hague, The Netherlands.
Vitiligo International Patient Organisations, Paris, France.
Association Française du Vitiligo, Paris, France.
Department of Dermatology, Microbiology and Immunology, Robert H. Lurie Comprehensive Cancer Center, Northwestern University, Chicago, Illinois, USA.
Phototherapy Unit, San Gallicano Dermatological Institute, IFO, Rome, Italy.
Department of Dermatology, College of Medicine, Dongguk University Ilsan Hospital, Goyang, Korea.
Department of Dermatology, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan.
Pigmentation Research and Therapeutics, Osaka Metropolitan University, Osaka, Japan.
Department of Dermatology, Severance Hospital, Cutaneous Biology Research Institute, Yonsei University College of Medicine, Seoul, South Korea.
Department of Dermatology, University of Massachusetts Chan Medical School, Worcester, Massachusetts, USA.
Department of Dermatology and Venereology, All India Institute of Medical Sciences, New Delhi, India.
Vitiligo & Pigmentation Institute of Southern California, Los Angeles, California, USA.
Skin Physicians Pte Ltd, Singapore, Singapore.
Department of Dermatology, Jaslok Hospital and Research Hospital and South Mumbai Dermatology Clinic, Mumbai, India.
Department of Dermatology, Faculty of Medicine Cairo University, Cairo, Egypt.
New Cross Hospital, The Royal Wolverhampton NHS Trust, Wolverhampton, UK.
Department of Dermatology, University Hospital Münster, Münster, Germany.
Department of Dermatology, Mohammed V University, Ibn Sina University Hospital, Rabat, Morocco.
Department of Dermatology, Netherlands Institute for Pigment Disorders, Amsterdam University Medical Centers, Amsterdam Institute for Infection and Immunity, VU University, Amsterdam, The Netherlands.
Department of Dermatology, St. Vincent's Hospital, College of Medicine, The Catholic University of Korea, Seoul, South Korea.
Department of Dermatology, Clinica Dermatologica Moragas, Barcelona, Spain.
Dermatology, Andrology, and Venereology Department, Ain Shams University, Cairo, Egypt.
Unicamillus International University, Rome, Italy.

BACKGROUND: The treatment of vitiligo can be challenging. Up-to-date agreed consensus recommendations on the use of topical and systemic therapies to facilitate the clinical management of vitiligo are currently lacking. OBJECTIVES: To develop internationally agreed-upon expert-based recommendations for the treatment of vitiligo. METHODS: In this consensus statement, a consortium of 42 international vitiligo experts and four patient representatives participated in different online and live meetings to develop a consensus management strategy for vitiligo. At least two vitiligo experts summarized the evidence for different topics included in the algorithms. A survey was then given to a core group of eight experts to resolve the remaining issues. Subsequently, the recommendations were finalized and validated based on further input from the entire group during two live meetings. RESULTS: The recommendations provided summarize the latest evidence regarding the use of topical therapies (steroids, calcineurin inhibitors and Jak-inhibitors) and systemic therapies, including steroids and other systemic immunomodulating or antioxidant agents. The different modalities of phototherapies (NB-UVB, photochemotherapy, excimer devices and home phototherapy), which are often combined with other therapies, are also summarized. Interventional approaches as well as depigmentation strategies are presented for specific indications. Finally, the status of innovative and targeted therapies under development is discussed. CONCLUSIONS: This international consensus statement culminated in expert-based clinical practice recommendations for the treatment of vitiligo. The development of new therapies is ongoing in vitiligo, and this will likely improve the future management of vitiligo, a disease that still has many unmet needs.

Dermatology
Tejasvi T, Trupiano N, Scharnitz T, **Novice T**, and Ellis CN. High rate of incidental detection of skin cancer following teledermatology consultation: Full body skin examination may detect more skin cancers than a referral-based approach. *JAAD Int* 2023; 13:115-116. PMID: 37779556. Full Text

Dermatology Service, Veterans Affairs Ann Arbor Healthcare System, Ann Arbor, Michigan.
Department of Dermatology, University of Michigan Medical School, Ann Arbor, Michigan.
Department of Dermatology, Henry Ford Health System, Detroit, Michigan.

Dermatology
van Geel N, Speeckaert R, Taïeb A, Ezzedine K, **Lim HW**, Pandya AG, Passeron T, Wolkerstorfer A, Abdallah M, Alomar A, Bae JM, Bekkenk M, Benzekri L, Böhm M, Eleftheriadou V, Esmat S, Ghia D, Goh BK, Grimes P, Gupta S, **Hamzavi IH**, Harris JE, Oh SH, **Huggins R**, Katayama I, Lan E, Lee AY, Leone G, Le Poole C, Lui H, Maquignon N, Meurant JM, Monteiro P, Oiso N, Parsad D, Pliszewski G, Raboobee N, Rodrigues M, Rosmarin D, Suzuki T, Tanemura A, Thng S, Xiang F, Zhou Y, Picardo M, and Seneschal J. Worldwide expert recommendations for the diagnosis and management of vitiligo: Position statement from the International Vitiligo Task Force Part 1: towards a new management algorithm. *J Eur Acad Dermatol Venereol* 2023; Epub ahead of print. PMID: 37746876. Full Text

Department of Dermatology, Ghent University Hospital, Ghent, Belgium.
Department of Dermatology and Pediatric Dermatology, National Reference Center for Rare Skin Disorders, Hospital Saint-André, BRIC, UMR 1312, Inserm, University Bordeaux, Bordeaux, France.
Department of Dermatology, University Hospital Henri Mondor, EpiDermE EA 7379, Université Paris-Est Créteil Val de Marne, Créteil, France.
Department of Dermatology, Henry Ford Health, Detroit, Michigan, USA.
Department of Dermatology, The University of Texas Southwestern Medical Center, Dallas, Texas, USA.
Department of Dermatology, University Hospital of Nice, Nice, France.
Department of Dermatology, Netherlands Institute for Pigment Disorders, Amsterdam University Medical Centers, Amsterdam Institute for Infection and Immunity, University of Amsterdam, Amsterdam, The Netherlands.
Dermatology, Andrology, and Venereology Department, Ain Shams University, Cairo, Egypt.
Department of Dermatology, Clinica Dermatologica Moragas, Barcelona, Spain.
Department of Dermatology, St. Vincent's Hospital, College of Medicine, The Catholic University of Korea, Seoul, South Korea.
Department of Dermatology, Netherlands Institute for Pigment Disorders, Amsterdam University Medical Centers, Amsterdam Institute for Infection and Immunity, VU University, Amsterdam, The Netherlands.
Department of Dermatology, Ibn Sina University Hospital, Mohammed V University, Rabat, Morocco.
Department of Dermatology, University Hospital Münster, Münster, Germany.
New Cross Hospital, The Royal Wolverhampton NHS Trust, Wolverhampton, UK.
Department of Dermatology, Faculty of Medicine, Cairo University, Cairo, Egypt.
Department of Dermatology, Jaslok Hospital and Research Hospital and South Mumbai Dermatology Clinic, Mumbai, India.
Skin Physicians Pte Ltd, Mount Elizabeth Medical Centre, Singapore City, Singapore.
Vitiligo & Pigmentation Institute of Southern California, Los Angeles, California, USA.
Department of Dermatology and Venereology, All India Institute of Medical Sciences, New Delhi, India.
Department of Dermatology, University of Massachusetts Chan Medical School, Worcester, Massachusetts, USA.
Department of Dermatology, Severance Hospital, Cutaneous Biology Research Institute, Yonsei University College of Medicine, Seoul, South Korea.
Pigmentation Research and Therapeutics, Osaka Metropolitan University, Osaka, Japan.
Department of Dermatology, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan.
Department of Dermatology, College of Medicine, Dongguk University Ilsan Hospital, Goyang, Korea.
Phototherapy Unit, San Gallicano Dermatological Institute, IFO, Rome, Italy.
Departments of Dermatology, Microbiology and Immunology, Robert H. Lurie Comprehensive Cancer Center Northwestern University, Chicago, Illinois, USA.

Department of Dermatology and Skin Science, University of British Columbia, Vancouver, British Columbia, Canada.
Association Française du Vitiligo, Paris, France.
Vitiligo International Patient Organisations Committee, Paris, France.
Vitiligo.nl, Den Haag, The Netherlands.
Department of Dermatology, Kindai University Nara Hospital, Ikoma, Japan.
Department of Dermatology, Venereology & Leprology, Postgraduate Institute of Medical Education and Research, Chandigarh, India.
Deutscher Vitiligo-Bund e.V., Adelsdorf, Germany.
Department of Dermatology, Westville Hospital, Durban, South Africa.
Chroma Dermatology, Pigment and Skin of Colour Centre, Parkville, Victoria, Australia.
Department of Dermatology, The Royal Children's Hospital, Parkville, Victoria, Australia.
Department of Dermatology, Tufts University School of Medicine, Boston, Massachusetts, USA.
Department of Dermatology, Yamagata University Faculty of Medicine, Yamagata, Japan.
Department of Dermatology Integrated Medicine, Osaka University Graduate School of Medicine, Osaka, Japan.
Skin Research Institute of Singapore, ASTAR, Singapore City, Singapore.
Department of Dermatology, Huashan Hospital, Fudan University, Shanghai, China.
Unicamillus International University, Rome, Italy.
Department of Dermatology and Pediatric Dermatology, National Reference Center for Rare Skin disorders, Hospital Saint-André, University of Bordeaux, CNRS UMR 5164, ImmunoConcept, Bordeaux, France.

BACKGROUND: The treatment of vitiligo can be challenging and depends on several factors such as the subtype, disease activity, vitiligo extent, and treatment goals. Vitiligo usually requires a long-term approach. To improve the management of vitiligo worldwide, a clear and up-to-date guide based on international consensus with uniform stepwise recommendations is needed. OBJECTIVES: To reach an international consensus on the nomenclature and to develop a management algorithm for the diagnosis, assessment, and treatment of vitiligo. METHODS: In this consensus statement, a consortium of 42 international vitiligo experts and four patient representatives participated in online and live meetings to develop a consensus management strategy for vitiligo. At least two vitiligo experts summarized the evidence of topics included in the algorithms. A survey was utilized to resolve remaining issues among a core group of eight experts. Subsequently, the unanimous recommendations were finalized and validated based on further input from the entire group during two live meetings. RESULTS: The algorithms highlight the importance of shared decision-making. Dermatologists are encouraged to provide patients with detailed explanations of the prognosis and expected therapeutic outcomes based on clinical examination. The treatment goal should be discussed and clearly emphasized to patients given the different approaches for disease stabilization and repigmentation. The evaluation of disease activity remains a cornerstone in the tailor-made approach to vitiligo patients. CONCLUSIONS: These new treatment algorithms are intended to guide clinical decision-making in clinical practice. Promising novel therapies for vitiligo are on the horizon, further highlighting the need for reliable outcome measurement instruments and greater emphasis on shared decision-making.

Dermatology

Zhang Y, Liu X, Sun K, Luo Y, Yang J, Li A, Kiupel M, Fenske S, Biel M, **Mi QS**, Wang H, and Xiao H. Hyperpolarization-activated cyclic nucleotide-gated cation channel 3 promotes HCC development in a female-biased manner. *Cell Rep* 2023; 42(10):113157. PMID: 37733590. Full Text

Department of Physiology, Michigan State University, East Lansing, MI 48824, USA; Cell and Molecular Biology Program, Michigan State University, East Lansing, MI 48824, USA.
Department of Physiology, Michigan State University, East Lansing, MI 48824, USA; Cancer Center, Southern Medical University, Guangzhou, Guangdong 510315, China.
Department of Physiology, Michigan State University, East Lansing, MI 48824, USA; College of Osteopathic Medicine, Michigan State University, East Lansing, MI 48824, USA.
Department of Physiology, Michigan State University, East Lansing, MI 48824, USA.

Department of Pathobiology and Diagnostic Investigation, Michigan State University, East Lansing, MI 48824, USA.
Department of Pharmacy - Center for Drug Research, Ludwig-Maximilians Universität München, 81377 München, Germany.
Immunology Program, Henry Ford Cancer Institute, Henry Ford Health, Detroit, MI 48202, USA; Center for Cutaneous Biology and Immunology, Department of Dermatology, Henry Ford Health, Detroit, MI 48202, USA.
Department of Physiology, Michigan State University, East Lansing, MI 48824, USA; Cell and Molecular Biology Program, Michigan State University, East Lansing, MI 48824, USA. Electronic address: xiaoh@msu.edu.

Sex differences in hepatocellular carcinoma (HCC) development are regulated by sex and non-sex chromosomes, sex hormones, and environmental factors. We previously reported that Ncoa5(+/-) mice develop HCC in a male-biased manner. Here we show that NCOA5 expression is reduced in male patient HCCs while the expression of an NCOA5-interacting tumor suppressor, TIP30, is lower in female HCCs. Tip30 heterozygous deletion does not change HCC incidence in Ncoa5(+/-) male mice but dramatically increases HCC incidence in Ncoa5(+/-) female mice, accompanied by hepatic hyperpolarization-activated cyclic nucleotide-gated cation channel 3 (HCN3) overexpression. HCN3 overexpression cooperates with MYC to promote mouse HCC development, whereas Hcn3 knockout preferentially hinders HCC development in female mice. Furthermore, HCN3 amplification and overexpression occur in human HCCs and correlate with a poorer prognosis of patients in a female-biased manner. Our results suggest that TIP30 and NCOA5 protect against female liver oncogenesis and that HCN3 is a female-biased HCC driver.

Dermatology

Zhang Y, Luo Y, Liu X, Kiupel M, Li A, Wang H, **Mi QS**, and Xiao H. NCOA5 haploinsufficiency in myeloid-lineage cells sufficiently causes non-alcoholic steatohepatitis and hepatocellular carcinoma. *Cell Mol Gastroenterol Hepatol* 2023; Epub ahead of print. PMID: 37734594. Full Text

Cellular and Molecular Biology Program, Michigan State University, East Lansing, Michigan, 48824, USA; Department of Physiology, Michigan State University, East Lansing, Michigan, 48824, USA.
Department of Physiology, Michigan State University, East Lansing, Michigan, 48824, USA; Cancer Center, Southern Medical University, Guangzhou, Guangdong, 510315, China; Integrated Hospital of Traditional Chinese Medicine, Southern Medical University, Guangzhou, Guangdong, 510315, China.
Department of Pathobiology and Diagnostic Investigation, Michigan State University, East Lansing, Michigan, 48824, USA.
Cancer Center, Southern Medical University, Guangzhou, Guangdong, 510315, China; Integrated Hospital of Traditional Chinese Medicine, Southern Medical University, Guangzhou, Guangdong, 510315, China.
Department of Physiology, Michigan State University, East Lansing, Michigan, 48824, USA.
Immunology Program, Henry Ford Cancer Institute, Department of Dermatology, Henry Ford Health, 1 Ford Place, Detroit, Michigan, 48202, USA; Center for Cutaneous Biology and Immunology, Department of Dermatology, Henry Ford Health, 1 Ford Place, Detroit, Michigan, 48202, USA.
Department of Physiology, Michigan State University, East Lansing, Michigan, 48824, USA. Electronic address: xiaoh@msu.edu.

BACKGROUND & AIMS: The nuclear receptor coactivator 5 (NCOA5) is a putative type 2 diabetes susceptibility gene. NCOA5 haploinsufficiency results in the spontaneous development of nonalcoholic fatty liver disease (NAFLD), insulin resistance, and hepatocellular carcinoma (HCC) in male mice; however, the cell-specific effect of NCOA5 haploinsufficiency in various types of cells, including macrophages, on the development of NAFLD and HCC remains unknown. METHODS: Control and myeloid-lineage-specific Ncoa5 deletion (Ncoa5(ΔM/+)) mice fed a normal diet were examined for the development of NAFLD, non-alcoholic steatohepatitis (NASH), and HCC. Altered genes and signaling pathways in the intrahepatic macrophages of Ncoa5(ΔM/+) male mice were analyzed and compared with that of obese human individuals. The role of platelet factor 4 (PF4) in macrophages and the underlying mechanism by which PF4 affects NAFLD/NASH were explored in vitro and in vivo. PF4 expression in

HCC patient specimens and prognosis was examined. RESULTS: Myeloid-lineage-specific Ncoa5 deletion sufficiently causes spontaneous NASH and HCC development in male mice fed a normal diet. PF4 overexpression in Ncoa5(ΔM/+) intrahepatic macrophages is identified as a potent mediator to trigger lipid accumulation in hepatocytes by inducing lipogenesis-promoting gene expression. The transcriptome of intrahepatic macrophages from Ncoa5(ΔM/+) male mice resembles that of obese human individuals. High PF4 expression correlated with poor prognosis of HCC patients and increased infiltrations of M2 macrophages, regulatory T cells (Tregs), and myeloid-derived suppressor cells (MDSCs) in HCCs. CONCLUSIONS: Our findings reveal a novel mechanism for the onset of NAFLD/NASH and HCC initiated by NCOA5-deficient macrophages, suggesting the NCOA5-PF4 axis in macrophages as a potential target for developing preventive and therapeutic interventions against NAFLD/NASH and HCC.

Diagnostic Radiology

Poyiadji N, **Klochko C**, and **Griffith B**. Radiology Resident Diagnostic In-Training Exam Scores: Impact of Subspecialty Imaging Volume and Rotation Scheduling. *Curr Probl Diagn Radiol* 2023; Epub ahead of print. PMID: 37704488. Full Text

Department of Radiology, Henry Ford Hospital, Detroit, MI.
Department of Radiology, Henry Ford Hospital, Detroit, MI; Michigan State University College of Human Medicine, East Lansing, MI. Electronic address: brentg@rad.hfh.edu.

PURPOSE: To determine the relationship between resident imaging volumes and number of subspecialty rotations with Diagnostic Radiology In-Training (DXIT) subspecialty scores. METHODS: DXIT-scaled subspecialty scores from a single large diagnostic radiology training program from 2014 to 2020 were obtained. The cumulative number of imaging studies dictated by each resident and specific rotations were mapped to each subspecialty for each year of training. DXIT subspecialty scores were compared against the total subspecialty imaging volume and the total number of rotations in a subspecialty for each resident year. A total of 52 radiology residents were trained during the study period and included in the dataset. RESULTS: There was a positive linear relationship between the number of neuro studies and scaled neuro DXIT scores for R1s (Pearson coefficient: 0.29; p-value: 0.034) and between the number of breast studies and the number of neuro studies with DXIT scores for R2s (Pearson coefficients: 0.50 and 0.45, respectively; p-values: 0.001 and 0.003, respectively). Furthermore, a positive significant linear relationship between the total number of rotations in cardiac, breast, neuro, and thoracic subspecialties and their scaled DXIT scores for R2 residents (Pearson coefficients: 0.34, 0.49, 0.33, and 0.32, respectively; p-value: 0.025, 0.001, 0.03, and 0.036, respectively) and between the total number of nuclear medicine rotations with DXIT scores for R3s (Pearson coefficient: 0.41; p-value: 0.016). CONCLUSION: Resident subspecialty imaging volumes and rotations have a variable impact on DXIT scores. Understanding the impact of study volume and the number of subspecialty rotations on resident medical knowledge will help residents and program directors determine how much emphasis to place on these factors during residency.

Diagnostic Radiology

Sumner C, Kietzman A, Kadom N, Frigini A, Makary MS, Martin A, McKnight C, Retrouvey M, Spieler B, and **Griffith B**. Medical Malpractice and Diagnostic Radiology: Challenges and Opportunities. *Acad Radiol* 2023; Epub ahead of print. PMID: 37741730. Full Text

Department of Radiology and Imaging Sciences, Emory University (C.S., N.K.), Atlanta, GA.
Baylor College of Medicine (A.K.), Houston, TX.
Department of Radiology, Baylor College of Medicine (A.F.), Houston, TX.
Department of Radiology, Ohio State University Wexner Medical Center (M.S.M.), Columbus, OH.
Louisiana State University Health Sciences Center (A.M.), New Orleans, LA.
Department of Radiology, Vanderbilt University Medical Center (C.M.), Nashville, TN.
Department of Radiology, Eastern Virginia Medical School/Medical Center Radiologists (M.R.), Norfolk, VA.
Department of Radiology, University Medical Center, Louisiana State University Health Sciences Center (B.S.), New Orleans, LA.

Department of Radiology, Henry Ford Health (B.G.), Detroit, MI. Electronic address: brentg@rad.hfh.edu.

Medicolegal challenges in radiology are broad and impact both radiologists and patients. Radiologists may be affected directly by malpractice litigation or indirectly due to defensive imaging ordering practices. Patients also could be harmed physically, emotionally, or financially by unnecessary tests or procedures. As technology advances, the incorporation of artificial intelligence into medicine will bring with it new medicolegal challenges and opportunities. This article reviews the current and emerging direct and indirect effects of medical malpractice on radiologists and summarizes evidence-based solutions.

Diagnostic Radiology

Yadav RN, **Oravec DJ**, **Morrison CK**, **Bevins NB**, **Rao SD**, and **Yeni YN**. Digital wrist tomosynthesis (DWT)-based finite element analysis of ultra-distal radius differentiates patients with and without a history of osteoporotic fracture. *Bone* 2023; 177:116901. PMID: 37714502. Full Text

Bone and Joint Center, Henry Ford Health, Detroit, MI, USA.
Department of Radiology, Henry Ford Health, Detroit, MI, USA.
Division of Endocrinology, Diabetes and Bone, Mineral Disorders, and Bone, Mineral Research Laboratory, Henry Ford Health, Detroit, MI, USA.
Bone and Joint Center, Henry Ford Health, Detroit, MI, USA; Henry Ford Health + Michigan State University Health Sciences, Detroit, MI, USA. Electronic address: yeni@bjc.hfh.edu.

Despite effective therapies for those at risk of osteoporotic fracture, low adherence to screening guidelines and limited accuracy of bone mineral density (BMD) in predicting fracture risk preclude identification of those at risk. Because of high adherence to routine mammography, bone health screening at the time of mammography using a digital breast tomosynthesis (DBT) scanner has been suggested as a potential solution. BMD and bone microstructure can be measured from the wrist using a DBT scanner. However, the extent to which biomechanical variables can be derived from digital wrist tomosynthesis (DWT) has not been explored. Accordingly, we measured stiffness from a DWT based finite element (DWT-FE) model of the ultra-distal (UD) radius and ulna, and correlate these to reference microcomputed tomography image based FE (μCT-FE) from five cadaveric forearms. Further, this method is implemented to determine in vivo reproducibility of FE derived stiffness of UD radius and demonstrate the in vivo utility of DWT-FE in bone quality assessment by comparing two groups of postmenopausal women with and without a history of an osteoporotic fracture (Fx; n = 15, NFx; n = 51). Stiffness obtained from DWT and μCT had a strong correlation ($R(2) = 0.87$, $p < 0.001$). In vivo repeatability error was <5 %. The NFx and Fx groups were not significantly different in DXA derived minimum T-scores ($p > 0.3$), but stiffness of the UD radius was lower for the Fx group ($p < 0.007$). Logistic regression models of fracture status with stiffness of the nondominant arm as the predictor were significant ($p < 0.01$). In conclusion this study demonstrates the feasibility of fracture risk assessment in mammography settings using DWT imaging and FE modeling in vivo. Using this approach, bone and breast screening can be performed in a single visit, with the potential to improve both the prevalence of bone health screening and the accuracy of fracture risk assessment.

Emergency Medicine

Gill JK, **Bissonette A**, **Cook AA**, **Jaehne AK**, **Day J**, **Renaud S**, **Jacobsen G**, Nelson K, Kozikowski L, **Jayaprakash N**, **Gardner-Gray J**, **Swiderek J**, Oldmixon CF, Ringwood NJ, Sherwin RL, Williams MD, **Gupta AH**, **Johnson NJ**, Hyzy RC, Park PK, and **Rivers EP**. Research Staff COVID-19 Pandemic Survey-Results from the Prevention and Early Treatment of Acute Lung Injury (PETAL) Network. *COVID* 2023; 3(10):1528-1543. PMID: Not assigned. Full Text

1. Department of Emergency Medicine, Henry Ford Hospital, Detroit, MI 48202, USA
2. Department of Pulmonary and Critical Care, Henry Ford Hospital, Detroit, MI 48202, USA
3. Public Health Science, Henry Ford Hospital, Detroit, MI 48202, USA
4. Department of Pulmonary Critical Care, University of Michigan, Ann Arbor, MI 48109, USA
5. Bay State Medical Center, Springfield, MA 01199, USA
6. The PETAL Network Clinical Coordinating Center, Boston, MA 02114, USA
7. Department of Emergency Medicine, Detroit Medical Center, Detroit, MA 48201, USA

8. Department of Pulmonary and Critical Care, Indiana University School of Medicine, Indianapolis, IN 46202, USA
9. Department of Surgery & Critical Care, Henry Ford Hospital, Detroit, MI 48202, USA
10. Department of Emergency Medicine & Pulmonary Critical Care, University of Washington, Seattle, WA 98195, USA
11. Department of Surgery, University of Michigan, Ann Arbor, MI,48109, USA

Objectives: There is a lack of knowledge about the challenges of researchers who continued in-person research during the early phases of the COVID-19 pandemic. Design: Electronic survey assessing work-related exposure to COVID-19, logistical challenges, and procedural changes during the first year of the COVID-19 pandemic on clinical research. Setting: National Heart, Lung, and Blood Institute-sponsored Prevention and Early Treatment of Acute Lung Injury Clinical Trial Network Centers. Subjects: Research staff at research Network Sites. Measurements and Main Results: The 37-question survey was completed by 277 individuals from 24 states between 29 September 2020, and 12 December 2020, yielding a response rate of 37.7%. Most respondents (91.5%) indicated that non-COVID-19 research was affected by COVID-19 research studies. In response to the COVID-19 pandemic, 20% of respondents were reassigned to different roles at their institution. Many survey takers were exposed to COVID-19 (56%), with more than 50% of researchers requiring a COVID-19 test and 8% testing positive. The fear of infection was 2.7-times higher compared to pre-COVID-19 times. Shortages of personal protective equipment were encountered by 34% of respondents, primarily due to lack of access to N95 masks, followed by gowns and protective eyewear. Personal protective equipment reallocation from research to clinical use was reported by 31% of respondents. Most of the respondents (88.5%), despite these logistical challenges, indicated their willingness to enroll COVID-19 patients. Conclusions: During the first year of the COVID-19 pandemic, members of the research network were engaged in COVID-19 research despite logistical challenges, limited access to personal protective equipment, and fear of exposure. The research network's survey experience can inform ongoing policy discussions to create research enterprises that can dexterously refocus research to address the knowledge gaps associated with novel public health emergencies while mitigating the effect of pandemics on existing research projects and research personnel.

Emergency Medicine

Papa L, Cienki JJ, Wilson JW, Axline V, **Coyle EA**, Earwood RC, Thundiyil JG, and Ladde JG. Sex Differences in Neurological Emergencies Presenting to Multiple Urban Level 1 Trauma Centers. *Neurotrauma Rep* 2023; 4(1):605-612. PMID: 37731649. Full Text

Department of Emergency Medicine, Orlando Regional Medical Center, Orlando, Florida, USA.
Department of Emergency Medicine, Jackson Memorial Hospital, Miami, Florida, USA.
Division of Emergency Medicine, Morsani College of Medicine, Tampa, Florida, USA.
Department of Emergency Medicine, Henry Ford Health, Detroit, Michigan, USA.
Department of Emergency Medicine, Stony Brook University, Stony Brook, New York, USA.

Previous studies have suggested that there are sex differences in the treatment and outcome of neurological emergencies; however, research identifying the role these sex differences play in the management of neurological emergencies is lacking. More knowledge of the way sex factors into the pathophysiology of neurological emergencies will be helpful in improving outcomes for these patients. The aim of this cross-sectional study was to assess the prevalence and management of neurological emergencies while evaluating sex differences in the diagnosis and treatment of these emergencies. We analyzed a cohort of 530 adult patients from four level 1 trauma centers over a period of 4 weeks who had a chief complaint of a neurological emergency, including seizures, cerebrovascular events, headache disorders, traumatic brain injuries, and central nervous system infections. Among patients with neurological emergencies, a significantly lower proportion of female patients underwent neurosurgery and were admitted to the intensive care unit compared to male patients, but there were no significant differences between sexes in the time of symptom onset, type of hospital transportation, amount of neuroimaging performed, admission rates, hospital length of stay, and disposition from the emergency department. Although female patients were more likely to have a chief complaint of headache compared

to traumatic injuries in male patients, this was not statistically significant. A significantly higher proportion of female patients had health insurance coverage than male patients.

Emergency Medicine

Tanabe P, Ibemere S, Pierce AE, Freiermuth CE, Bosworth HB, Yang H, Osunkwo I, Paxton JH, Strouse JJ, **Miller J**, Paice JA, Veeramreddy P, Kavanagh PL, Wilkerson RG, Hughes R, and Barnhart HX. A Comparison of the effect of patient-specific vs. weight-based protocols to treat vaso-occlusive episodes (VOE) in the emergency department. *Acad Emerg Med* 2023; Epub ahead of print. PMID: 37731093. Full Text

Duke University, School of Nursing and School of Medicine, Durham, NC, USA.
Duke University School of Nursing, Durham, NC, USA.
Duke Global Health Institute, Durham, NC, USA.
Department of Emergency Medicine, The University of Texas Southwestern Medical Center, Dallas, Texas, USA.
University of Cincinnati College of Medicine, Emergency Medicine, Cincinnati, OH, USA.
Veterans Affairs Medical Center Durham, Center of Innovation to Accelerate Discovery and Practice Transformation (ADAPT), Durham, NC, USA.
Duke University Medical Center, Departments of Population Health Sciences, School of Medicine, Department of Psychiatry and Behavioral Sciences, School of Nursing, Durham, NC, USA.
Duke Clinical Research Institute, Durham, NC, USA.
Prior affiliation: Atrium Health, Levine Cancer Institute, Sickle Cell Disease Enterprise, Charlotte, NC, USA.
Current affiliation: Senior Vice President, Chief Patient Officer, Novo Nordisk.
Wayne State University School of Medicine, Emergency Medicine, Detroit, MI, USA.
Duke University School of Medicine, Department of Medicine and Pediatrics, Durham, NC, USA.
Henry Ford Health System, Emergency Medicine Detroit, MI, USA.
Northwestern University Feinberg School of Medicine, Division of Hematology-Oncology, Chicago, IL, USA.
Atrium Health, Charlotte, NC, USA.
Boston University School of Medicine, Department of Pediatrics, Boston, MA, USA.
University of Maryland School of Medicine, Emergency Medicine, Baltimore, MD, USA.
Case Western Reserve University School of Medicine, Emergency Medicine, Cleveland, OH, USA.
Duke University School of Medicine, Duke Molecular Physiology Institute, Department of Biostatistics and Bioinformatics, Durham, NC, USA.

BACKGROUND: Vaso-occlusive episodes (VOC) cause debilitating pain and are a common cause of emergency department (ED) visits, for people with sickle cell disease (SCD). Strategies for achieving optimal pain control vary widely despite evidence-based guidelines. We tested existing guidelines and hypothesized a patient-specific protocol (PSP) written by their SCD provider, may be more effective than weight-based (WB) dosing of parenteral opiate medication, in relieving pain. METHODS: Prospective, randomized controlled trial comparing a PSP versus WB protocol for patients presenting with VOC to six EDs. Patients were randomized to a PSP or WB protocol prior to an ED visit. SCD provider wrote their protocol and placed in the electronic health record for future ED visits with a VOC Exclusion criteria included: pre-existing PSP excluding parenteral opioid analgesia or out-patient use of buprenorphine or methadone, or highly suspected for COVID-19. Pain intensity scores, side effects and safety were obtained every 30 minutes for up to 6 hours post-ED bed placement. The primary outcome was change in pain intensity score from placement in an ED space to disposition or six hours. RESULTS: 328 subjects were randomized, 104 participants enrolled (ED visit, target n=230) with complete data for 96 visits. The study was unable to reach the target sample size and stopped early due to the impact of COVID-19. We found no significant differences between groups in the primary outcome; patients randomized to a PSP had a shorter ED length of stay (p=.008); the prevalence of side effects was low in both groups. Subjects in both groups experienced both a clinically meaningful and statistically significant decrease in pain (27 mm on a 0-100 mm scale) CONCLUSIONS: We found a shorter ED length of stay for patients assigned to a PSP. Patients in both groups experienced good pain relief without significant side effects.

Emergency Medicine

Webb EK, Ely TD, Rowland GE, Lebois LAM, van Rooij SJH, Bruce SE, Jovanovic T, House SL, Beaudoin FL, An X, Neylan TC, Clifford GD, Linnstaedt SD, Germine LT, Bollen KA, Rauch SL, Haran JP, Storrow AB, **Lewandowski C**, Musey PI, Jr., Hendry PL, Sheikh S, Jones CW, Punches BE, Swor RA, Pascual JL, Seamon MJ, Datner EM, Pearson C, Peak DA, Merchant RC, Domeier RM, Rathlev NK, Sergot P, Sanchez LD, Kessler RC, Koenen KC, McLean SA, Stevens JS, Ressler KJ, and Harnett NG. Neighborhood Disadvantage and Neural Correlates of Threat and Reward Processing in Survivors of Recent Trauma. *JAMA Netw Open* 2023; 6(9):e2334483. PMID: 37721751. Full Text

Division of Depression and Anxiety, McLean Hospital, Belmont, Massachusetts.
Department of Psychiatry, Harvard Medical School, Boston, Massachusetts.
Department of Psychiatry and Behavioral Sciences, Emory University School of Medicine, Atlanta, Georgia.
Department of Psychological Sciences, University of Missouri-St Louis.
Department of Psychiatry and Behavioral Neurosciences, Wayne State University, Detroit, Michigan.
Department of Emergency Medicine, Washington University School of Medicine, St Louis, Missouri.
Department of Epidemiology, Brown University, Providence, Rhode Island.
Department of Emergency Medicine, Brown University, Providence, Rhode Island.
Institute for Trauma Recovery, Department of Anesthesiology, University of North Carolina at Chapel Hill.
Department of Psychiatry, University of California, San Francisco.
Department Neurology, University of California, San Francisco.
Department of Biomedical Informatics, Emory University School of Medicine, Atlanta, Georgia.
Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta.
The Many Brains Project, Belmont, Massachusetts.
Institute for Technology in Psychiatry, Harvard Medical School, Boston, Massachusetts.
Department of Psychology and Neuroscience, University of North Carolina at Chapel Hill.
Department of Sociology, University of North Carolina at Chapel Hill.
Department of Psychiatry, McLean Hospital, Belmont, Massachusetts.
Department of Emergency Medicine, University of Massachusetts Chan Medical School, Worcester, Massachusetts.
Department of Emergency Medicine, Vanderbilt University Medical Center, Nashville, TN.
Department of Emergency Medicine, Henry Ford Health System, Detroit, Michigan.
Department of Emergency Medicine, Indiana University School of Medicine, Indianapolis.
Department of Emergency Medicine, University of Florida College of Medicine-Jacksonville.
Department of Emergency Medicine, Cooper Medical School of Rowan University, Camden, New Jersey.
Department of Emergency Medicine, Ohio State University College of Medicine, Columbus.
College of Nursing, Ohio State University, Columbus.
Department of Emergency Medicine, Oakland University William Beaumont School of Medicine, Rochester, Michigan.
Department of Surgery, Division of Traumatology, Surgical Critical Care and Emergency Surgery, Perelman School of Medicine, University of Pennsylvania, Philadelphia.
Department of Neurosurgery, Perelman School of Medicine, University of Pennsylvania, Philadelphia.
Department of Emergency Medicine, Einstein Healthcare Network, Philadelphia, Pennsylvania.
Department of Emergency Medicine, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, Pennsylvania.
Department of Emergency Medicine, Wayne State University, Ascension St John Hospital, Detroit, Michigan.
Department of Emergency Medicine, Massachusetts General Hospital, Boston.
Department of Emergency Medicine, Brigham and Women's Hospital, Boston, Massachusetts.
Department of Emergency Medicine, Trinity Health-Ann Arbor, Ypsilanti, Michigan.
Department of Emergency Medicine, University of Massachusetts Medical School-Baystate, Springfield.
Department of Emergency Medicine, McGovern Medical School at UTHealth, Houston, Texas.
Department of Emergency Medicine, Harvard Medical School, Boston, Massachusetts.
Department of Health Care Policy, Harvard Medical School, Boston, Massachusetts.
Department of Epidemiology, Harvard T.H. Chan School of Public Health, Harvard University, Boston, Massachusetts.

Department of Emergency Medicine, University of North Carolina at Chapel Hill.
Institute for Trauma Recovery, Department of Psychiatry, University of North Carolina at Chapel Hill.

IMPORTANCE: Differences in neighborhood socioeconomic characteristics are important considerations in understanding differences in risk vs resilience in mental health. Neighborhood disadvantage is associated with alterations in the function and structure of threat neurocircuitry. OBJECTIVE: To investigate associations of neighborhood disadvantage with white and gray matter and neural reactivity to positive and negative stimuli in the context of trauma exposure. DESIGN, SETTING, AND PARTICIPANTS: In this cross-sectional study, survivors of trauma who completed sociodemographic and posttraumatic symptom assessments and neuroimaging were recruited as part of the Advancing Understanding of Recovery After Trauma (AURORA) study between September 2017 and June 2021. Data analysis was performed from October 25, 2022, to February 15, 2023. EXPOSURE: Neighborhood disadvantage was measured with the Area Deprivation Index (ADI) for each participant home address. MAIN OUTCOMES AND MEASURES: Participants completed separate threat and reward tasks during functional magnetic resonance imaging. Diffusion-weighted and high-resolution structural images were also collected. Linear models assessed the association of ADI with reactivity, microstructure, and macrostructure of a priori regions of interest after adjusting for income, lifetime trauma, sex at birth, and age. A moderated-mediation model tested whether ADI was associated with neural activity via microstructural changes and if this was modulated by PTSD symptoms. RESULTS: A total of 280 participants (183 females [65.4%]; mean [SD] age, 35.39 [13.29] years) completed the threat task and 244 participants (156 females [63.9%]; mean [SD] age, 35.10 [13.26] years) completed the reward task. Higher ADI (per 1-unit increase) was associated with greater insula ($t_{274} = 3.20$; $\beta = 0.20$; corrected $P = .008$) and anterior cingulate cortex (ACC; $t_{274} = 2.56$; $\beta = 0.16$; corrected $P = .04$) threat-related activity after considering covariates, but ADI was not associated with reward reactivity. Greater disadvantage was also associated with altered microstructure of the cingulum bundle ($t_{274} = 3.48$; $\beta = 0.21$; corrected $P = .001$) and gray matter morphology of the ACC (cortical thickness: $t_{273} = -2.29$; $\beta = -0.13$; corrected $P = .02$; surface area: $t_{273} = 2.53$; $\beta = 0.13$; corrected $P = .02$). The moderated-mediation model revealed that ADI was associated with ACC threat reactivity via cingulum microstructural changes (index of moderated mediation = -0.02). However, this mediation was only present in individuals with greater PTSD symptom severity (at the mean: $\beta = -0.17$; standard error = 0.06, $t = -2.28$; $P = .007$; at 1 SD above the mean: $\beta = -0.28$; standard error = 0.08; $t = -3.35$; $P < .001$). CONCLUSIONS AND RELEVANCE: In this study, neighborhood disadvantage was associated with neurobiology that supports threat processing, revealing associations of neighborhood disadvantage with neural susceptibility for PTSD and suggesting how altered structure-function associations may complicate symptoms. Future work should investigate specific components of neighborhood disadvantage that may be associated with these outcomes.

Endocrinology and Metabolism

Alfares K, and **Han HJ**. Neurosarcoidosis-Induced Panhypopituitarism. *Cureus* 2023; 15(8):e43169. PMID: 37692696. Full Text

Endocrinology, Diabetes, and Metabolism, King Abdulaziz University Faculty of Medicine, Jeddah, SAU.
Endocrinology, Diabetes, and Metabolism, Henry Ford Health System, Detroit, USA.
Internal Medicine, Henry Ford Health System, Detroit, USA.

Sarcoidosis is an inflammatory condition that can impact multiple organs in the body such as the lungs, skin, eyes, and, occasionally, the central nervous system. When sarcoidosis affects the nervous system, it is referred to as neurosarcoidosis and is estimated to occur in approximately 5%-15% of sarcoid patients. When neurosarcoidosis affects the pituitary gland, it can result in panhypopituitarism, which can be life-threatening. A 35-year-old male with a known diagnosis of sarcoidosis by skin biopsies presented to the hospital with altered mental status, hypernatremia, hypotension, and hypothermia. He reported symptoms of polyuria and polydipsia for several weeks before admission. Laboratory workup revealed elevated serum sodium at 167 mmol/L, high serum osmolality at 381 mOsm/kg, and low urine osmolality at 381 mOsm/kg, consistent with diabetes insipidus. Anterior pituitary hormone profile workup revealed low 8 am serum cortisol (1.9 mcg/dL) and inappropriately normal adrenocorticotropic hormone (ACTH) (34 pg/ml), low serum free testosterone (<2.5 ng/dL), low luteinizing hormone (0.7 mIU/ml), low follicular

stimulating hormone (< 2.6 mIU/ml), low free T4 at 0.4 ng/dL. and inappropriately normal thyroid-stimulating hormone (TSH) at 2.77 uIU/mL. Serum prolactin was mildly elevated at 86.8 ng/mL. Angiotensin-converting enzyme level was within the normal range at 33 U/L. A diagnosis of panhypopituitarism was made. Brain MRI revealed a 3 cm mass in the suprasellar region involving the hypothalamus and bilateral optic tracts with a mass effect on the anterior third ventricle. No discrete pituitary or stalk lesion was identified. A ventriculostomy tube was placed for developing hydrocephalus. A biopsy of the suprasellar mass revealed non-caseating granuloma, confirming neurosarcoidosis. Treatment was initiated with high-dose IV corticosteroids to manage secondary adrenal insufficiency and neurosarcoidosis. He was also started on IV desmopressin and IV levothyroxine to manage his diabetes insipidus and central hypothyroidism. He was transitioned to oral therapy upon discharge. Panhypopituitarism secondary to neurosarcoidosis is a rare presentation that can occur due to the infiltration of the pituitary gland or the infiltration of the hypothalamus affecting the hypothalamic-pituitary axis. Neurosarcoidosis should be considered a differential when evaluating patients with symptoms consistent with panhypopituitarism. Prompt diagnosis and initiation of corticosteroids and deficient hormones can be lifesaving.

Endocrinology and Metabolism

Yadav RN, **Oravec DJ**, **Morrison CK**, **Bevins NB**, **Rao SD**, and **Yeni YN**. Digital wrist tomosynthesis (DWT)-based finite element analysis of ultra-distal radius differentiates patients with and without a history of osteoporotic fracture. *Bone* 2023; 177:116901. PMID: 37714502. Full Text

Bone and Joint Center, Henry Ford Health, Detroit, MI, USA.
Department of Radiology, Henry Ford Health, Detroit, MI, USA.
Division of Endocrinology, Diabetes and Bone, Mineral Disorders, and Bone, Mineral Research Laboratory, Henry Ford Health, Detroit, MI, USA.
Bone and Joint Center, Henry Ford Health, Detroit, MI, USA; Henry Ford Health + Michigan State University Health Sciences, Detroit, MI, USA. Electronic address: yeni@bjc.hfh.edu.

Despite effective therapies for those at risk of osteoporotic fracture, low adherence to screening guidelines and limited accuracy of bone mineral density (BMD) in predicting fracture risk preclude identification of those at risk. Because of high adherence to routine mammography, bone health screening at the time of mammography using a digital breast tomosynthesis (DBT) scanner has been suggested as a potential solution. BMD and bone microstructure can be measured from the wrist using a DBT scanner. However, the extent to which biomechanical variables can be derived from digital wrist tomosynthesis (DWT) has not been explored. Accordingly, we measured stiffness from a DWT based finite element (DWT-FE) model of the ultra-distal (UD) radius and ulna, and correlate these to reference microcomputed tomography image based FE (μCT-FE) from five cadaveric forearms. Further, this method is implemented to determine in vivo reproducibility of FE derived stiffness of UD radius and demonstrate the in vivo utility of DWT-FE in bone quality assessment by comparing two groups of postmenopausal women with and without a history of an osteoporotic fracture (Fx; n = 15, NFx; n = 51). Stiffness obtained from DWT and μCT had a strong correlation ($R(2) = 0.87$, $p < 0.001$). In vivo repeatability error was <5 %. The NFx and Fx groups were not significantly different in DXA derived minimum T-scores ($p > 0.3$), but stiffness of the UD radius was lower for the Fx group ($p < 0.007$). Logistic regression models of fracture status with stiffness of the nondominant arm as the predictor were significant ($p < 0.01$). In conclusion this study demonstrates the feasibility of fracture risk assessment in mammography settings using DWT imaging and FE modeling in vivo. Using this approach, bone and breast screening can be performed in a single visit, with the potential to improve both the prevalence of bone health screening and the accuracy of fracture risk assessment.

Graduate Medical Education

Hoffert MM, **Pfeiffer L**, **Hepke M**, **Brink W**, **Newman J**, **Passalacqua KD**, and **Baker-Genaw K**. Gathering Trainee Feedback to Improve Programs With Low Annual ACGME Survey Content Area Compliance: A Pilot Study. *Acad Med* 2023; Epub ahead of print. PMID: 37748087. Full Text

M.M. Hoffert is director, Medical Education Instructional Design and Learning Systems & Resources, Graduate Medical Education, Henry Ford Health, Detroit, Michigan; ORCID: https://orcid.org/0000-0002-4941-4226.
L. Pfeiffer is manager, Accreditation, Medical Education, Graduate Medical Education, Henry Ford Health, Detroit, Michigan.
M. Hepke is manager, Accreditation, Medical Education, Graduate Medical Education, Henry Ford Health, Detroit, Michigan.
W. Brink is medical education coordinator, Graduate Medical Education, Henry Ford Health, Detroit, Michigan.
J. Newman is manager, Medical Education Instructional Design and Learning Systems & Resources, Graduate Medical Education, Henry Ford Health, Detroit, Michigan; ORCID: https://orcid.org/0000-0001-7815-5852.
K.D. Passalacqua is lead, Medical Writing and Education, Graduate Medical Education, Henry Ford Health, Detroit, Michigan; ORCID: https://orcid.org/0000-0002-2672-3261.
K. Baker-Genaw is director, Medical Education, and designated institutional officer, Graduate Medical Education and Department of Internal Medicine, Henry Ford Health, Detroit, Michigan,; ORCID: https://orcid.org/0000-0003-1552-2808.

PROBLEM: Systematically investigating annual Accreditation Council for Graduate Medical Education (ACGME) Resident/Fellow Survey results by directly gathering trainee feedback could uncover training program problems and clarify misunderstandings as they arise, leading to faster corrective actions and program improvement. APPROACH: The Focus Group Forum (FGF) was created based on the utilization-focused evaluation approach to systematically gather comprehensive, high-quality, actionable trainee feedback on specific annual ACGME survey results and involve trainees in program improvement (Henry Ford Hospital, 2021). Trainees from programs with survey results indicating <80% compliance within several content areas were invited to attend FGF sessions. During FGF sessions, neutral moderators experienced in conducting focus groups and creating psychologically safe spaces and neutral scribes gathered trainee feedback on survey results through structured, iterative discussions and an anonymous electronic polling system. Summaries of FGF findings were created, combined with actual annual ACGME survey data, and used to develop recommended corrective actions and monitoring plans. OUTCOMES: In 2021, 6 training programs had survey results below the institution's compliance threshold for 4-8 of the 9 content areas. Of the 180 trainees (from the 6 programs) invited to attend an FGF session, 79 (44%) participated. Five key issues were identified: misinterpretation of several survey questions, lack of knowledge of institutional policies and procedures, perceived inability to share feedback with faculty, feelings of being overwhelmed with administrative duties, and lack of sufficient protected time for educational activities and requirements. NEXT STEPS: The authors are developing an FGF process for faculty so that all stakeholders have a voice regarding annual ACGME survey results. They are also improving scheduling processes so that feedback from experienced trainees who are leaving the institution will not be missed and developing longer-term processes for tracking outcomes since time for implementing corrective actions before the next ACGME survey is limited.

Hematology-Oncology

Hwang C, Henderson NC, Chu SC, Holland B, Cackowski FC, **Pilling A**, Jang A, Rothstein S, Labriola M, Park JJ, Ghose A, Bilen MA, Mustafa S, Kilari D, Pierro MJ, Thapa B, Tripathi A, Garje R, Ravindra A, Koshkin VS, Hernandez E, Schweizer MT, Armstrong AJ, McKay RR, Dorff TB, Alva AS, and Barata PC. Biomarker-Directed Therapy in Black and White Men With Metastatic Castration-Resistant Prostate Cancer. *JAMA Netw Open* 2023; 6(9):e2334208. PMID: 37721753. Full Text

Henry Ford Health, Detroit, Michigan.
University of Michigan, Ann Arbor, Michigan.
Wayne State University School of Medicine, Detroit, Michigan.
Karmanos Cancer Institute, Detroit, Michigan.
Tulane University, New Orleans, Louisiana.
Division of Medical Oncology, Department of Medicine, Duke Cancer Institute Center for Prostate and Urologic Cancer, Duke University, Durham, North Carolina.
Emory University, Atlanta, Georgia.

Medical College of Wisconsin, Milwaukee, Wisconsin.
University of Oklahoma, Oklahoma City, Oklahoma.
University of Iowa, Iowa City, Iowa.
University of California San Francisco, San Francisco, California.
University of Washington, Seattle, Washington.
University of California San Diego, La Jolla, California.
City of Hope, Duarte, California.
University Hospitals Seidman Cancer Center, Cleveland, Ohio.

IMPORTANCE: Black men have higher incidence and mortality from prostate cancer. Whether precision oncology disparities affect Black men with metastatic castration-resistant prostate cancer (mCRPC) is unknown. OBJECTIVE: To compare precision medicine data and outcomes between Black and White men with mCRPC. DESIGN, SETTING, AND PARTICIPANTS: This retrospective cohort study used data collected by the Prostate Cancer Precision Medicine Multi-Institutional Collaborative Effort (PROMISE) consortium, a multi-institutional registry with linked clinicogenomic data, from April 2020 to December 2021. Participants included Black and White patients with mCRPC with molecular data. Data were analyzed from December 2021 to May 2023. EXPOSURES: Database-reported race and ethnicity. MAIN OUTCOMES AND MEASURES: The primary outcome was the frequency of actionable molecular data, defined as the presence of mismatch repair deficiency (MMRD) or high microsatellite instability (MSI-H), homologous recombination repair deficiency, or tumor mutational burden of 10 mutations per megabase or greater. Secondary outcomes included the frequency of other alterations, the type and timing of genomic testing performed, and use of targeted therapy. Efficacy outcomes were prostate-specific antigen response rate, site-reported radiographic response, and overall survival. RESULTS: A total of 962 eligible patients with mCRPC were identified, including 204 Black patients (21.2%; median [IQR] age at diagnosis, 61 [55-67] years; 131 patients [64.2%] with Gleason scores 8-10; 92 patients [45.1%] with de novo metastatic disease) and 758 White patients (78.8%; median [IQR] age, 63 [57-69] years; 445 patients [58.7%] with Gleason scores 8-10; 310 patients [40.9%] with de novo metastatic disease). Median (IQR) follow-up from mCRPC was 26.6 (14.2-44.7) months. Blood-based molecular testing was more common in Black men (111 men [48.7%]) than White men (317 men [36.4%]; P < .001). Rates of actionable alterations were similar between groups (65 Black men [32.8%]; 215 White men [29.1%]; P = .35), but MMRD or MSI-H was more common in Black men (18 men [9.1]) than White men (36 men [4.9%]; P = .04). PTEN alterations were less frequent in Black men than White men (31 men [15.7%] vs 194 men [26.3%]; P = .003), as were TMPRSS alterations (14 men [7.1%] vs 155 men [21.0%]; P < .001). No other differences were seen in the 15 most frequently altered genes, including TP53, AR, CDK12, RB1, and PIK3CA. Matched targeted therapy was given less frequently in Black men than White men (22 men [33.5%] vs 115 men [53.5%]; P = .008). There were no differences in response to targeted therapy or survival between the two cohorts. CONCLUSIONS AND RELEVANCE: This cohort study of men with mCRPC found higher frequency of MMRD or MSI-H and lower frequency of PTEN and TMPRSS alterations in Black men compared with White men. Although Black men received targeted therapy less frequently than White men, no differences were observed in clinical outcomes.

Hematology-Oncology

Nyati S, **Stricker H**, **Barton KN**, **Li P**, **Elshaikh M**, **Ali H**, **Brown SL**, **Hwang C**, **Peabody J**, **Freytag SO**, **Movsas B**, and **Siddiqui F**. A phase I clinical trial of oncolytic adenovirus mediated suicide and interleukin-12 gene therapy in patients with recurrent localized prostate adenocarcinoma. *PLoS One* 2023; 18(9):e0291315. PMID: 37713401. Full Text

Department of Radiation Oncology, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Radiology, College of Osteopathic Medicine, Michigan State University, East Lansing, Michigan, United States of America.
Vattikuti Urology Institute, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Public Health Sciences, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.

Department of Internal Medicine, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
College of Human Medicine, Michigan State University, East Lansing, Michigan, United States of America.

In a phase I dose escalation and safety study (NCT02555397), a replication-competent oncolytic adenovirus expressing yCD, TK and hIL-12 (Ad5-yCD/mutTKSR39rep-hIL-12) was administered in 15 subjects with localized recurrent prostate cancer (T1c-T2) at increasing doses (1 × 1010, to 1 × 1012 viral particles) followed by 7-day treatment of 5-fluorocytosine (5-FC) and valganciclovir (vGCV). The primary endpoint was toxicity through day 30 while the secondary and exploratory endpoints were quantitation of IL-12, IFNγ, CXCL10 and peripheral blood mononuclear cells (PBMC). The study maximum tolerated dose (MTD) was not reached indicating 1012 viral particles was safe. Total 115 adverse events were observed, most of which (92%) were grade 1/2 that did not require any treatment. Adenoviral DNA was detected only in two patients. Increase in IL-12, IFNγ, and CXCL10 was observed in 57%, 93%, and 79% patients, respectively. Serum cytokines demonstrated viral dose dependency, especially apparent in the highest-dose cohorts. PBMC analysis revealed immune system activation after gene therapy in cohort 5. The PSA doubling time (PSADT) pre and post treatment has a median of 1.55 years vs 1.18 years. This trial confirmed that replication-competent Ad5-IL-12 adenovirus (Ad5-yCD/mutTKSR39rep-hIL-12) was well tolerated when administered locally to prostate tumors.

Hematology-Oncology

Sousa TC, de Souza LP, Ricardo MLS, Yoshigae AY, Hinokuma KD, Gorzoni ABR, **de Aquino AM**, Scarano WR, de Sousa Castillho AC, Tavares MEA, Veras ASC, Teixeira GR, Nai GA, and de Oliveira Mendes L. Long exposure to a mixture of endocrine disruptors prediposes the ventral prostate of rats to preneoplastic lesions. *Environ Sci Pollut Res Int* 2023; Epub ahead of print. PMID: 37697193. Request Article

Graduate Program in Animal Science, Western São Paulo University (UNOESTE), Rodovia Raposo Tavares, Km 572 - Bairro Do Limoeiro, Presidente Prudente, SP, Brazil.
Faculty of Healthy Sciences, Western São Paulo University (UNOESTE), R. José Bongiovani, 700 - Cidade Universitária, Presidente Prudente, SP, Brazil.
Henry Ford Cancer Institute, Henry Ford Health, Detroit, MI, United States.
Department of Functional and Structural Biology, IBB/UNESP, Rubião Junior, Botucatu, SP, Brasil.
Experimental Laboratory of Exercise Biology (LEBioEx), São Paulo State University (UNESP), Presidente Prudente, SP, Brazil.
Graduate Program in Health Science, Western São Paulo University (UNOESTE), Rodovia Raposo Tavares, km 572 - Bairro do Limoeiro, Presidente Prudente, SP, CEP 19067-175, Brazil.
Graduate Program in Animal Science, Western São Paulo University (UNOESTE), Rodovia Raposo Tavares, Km 572 - Bairro Do Limoeiro, Presidente Prudente, SP, Brazil. leobio85@gmail.com.
Graduate Program in Health Science, Western São Paulo University (UNOESTE), Rodovia Raposo Tavares, km 572 - Bairro do Limoeiro, Presidente Prudente, SP, CEP 19067-175, Brazil. leobio85@gmail.com.

Endocrine disruptors (ED) are compounds dispersed in the environment that modify hormone biosynthesis, affecting hormone-dependent organs such as the prostate. Studies have only focused on evaluating the effects of ED alone or in small groups and short intervals and have not adequately portrayed human exposure. Therefore, we characterized the prostate histoarchitecture of rats exposed to an ED mixture (ED Mix) mimicking human exposure. Pregnant females of the Sprague-Dawley strain were randomly distributed into two experimental groups: Control group (vehicle: corn oil, by gavage) and ED Mix group: received 32.11 mg/kg/day of the ED mixture diluted in corn oil (2 ml/kg), by gavage, from gestational day 7 (DG7) to post-natal day 21 (DPN21). After weaning at DPN22, the male pups continued to receive the complete DE mixture until they were 220 days old when they were euthanized. The ED Mix decreased the epithelial compartment, increased the fractal dimension, and decreased glandular dilation. In addition, low-grade prostatic intraepithelial neoplasia was observed in addition to regions of epithelial atrophy in the group exposed to the ED Mix. Exposure to the mixture decreased both types I and III

collagen area in the stroma. We concluded that the ED Mix was able to cause alterations in the prostatic histoarchitecture and induce the appearance of preneoplastic lesions.

Hematology-Oncology
Zimmer M, and Kadia T. Approach to the Older Patient with Acute Myeloid Leukemia. *Curr Oncol Rep* 2023; Epub ahead of print. PMID: 37688738. Full Text

Division of Hematology/Oncology, Henry Ford Health System, Detroit, MI, USA.
Department of Leukemia, University of Texas MD Anderson Cancer Center, 1515 Holcombe Blvd, Box 428, Houston, TX, 77030, USA. tkadia@mdanderson.org.

PURPOSE OF REVIEW: This study aims to review the challenges of treating AML in older patients, the spectrum of genomic aberrancies in this cohort, and discuss treatment options for newly diagnosed AML in this patient population. RECENT FINDINGS: Greater understanding of biological underpinnings of AML and availability of newer, effective, targeted therapies have allowed us to move away from intensification of chemotherapy, to prioritize better tolerability while still maintaining efficacy. Increasing knowledge of the genomic complexity and adverse karyotypes in older AML patients drives the need for ongoing investigations of targeted and lower-intensity therapies in the frontline, relapsed/refractory setting, and post-remission.

Hospital Medicine
Burnett AE, Barnes GD, Allen AL, Ansell J, Blumenstein M, Connors JM, Dager WE, **Kaatz S**, May JE, Nemeth R, O'Connor C, Ragheb B, Rajasekhar A, Sardo L, Siegal DM, and Van Beek A. Comment on: 2023 updated AGS Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc* 2023; Epub ahead of print. PMID: 37702478. Full Text

Inpatient Thrombosis & Hemostasis Stewardship Program, University of New Mexico Health Sciences Center, Albuquerque, NM, USA.
Frankel Cardiovascular Center, University of Michigan, Ann Arbor, MI, USA.
Veterans Administration Salt Lake City Health Care System, Salt Lake City, UT, USA.
Lenox Hill Hospital, New York, NY, USA.
Children's Hospital of Philadelphia, Philadelphia, PA, USA.
Hematology Division, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA.
UC Davis Health System, San Diego, CA, USA.
UC San Francisco, San Francisco, CA, USA.
UC Davis, San Diego, CA, USA.
Michigan State University-College of Human Medicine, East Lansing, MI, USA.
Wayne State University-School of Medicine, Detroit, MI, USA.
Henry Ford Hospital, Detroit, MI, USA.
Division of Hematology/Oncology, University of Alabama at Birmingham, Birmingham, AL, USA.
Anticoagulation Clinics, Confluence Health, Wenatchee Washington, Wenatchee, WA, USA.
Mayo Clinic Health System-Eau Claire, Wisconsin, Eau Claire, WI, USA.
VA Eastern Colorado Health Care System, Aurora, CO, USA.
University of Florida Health, Gainsville, FL, USA.
St. Joseph's Healthcare, Hamilton, Hamilton, Ontario, Canada.
McMaster School of Nursing, Hamilton, Ontario, Canada.
University of Ottawa, Ottowa, Ontario, Canada.
Ottawa Hospital Research Institute, Ottowa, Ontario, Canada.
The Ottawa Hospital, Ottowa, Ontario, Canada.
Visalia Medical Clinic/Adventist Health Physicians Network, Visalia, CA, USA.

Hypertension and Vascular Research

Bryson TD, and **Harding P**. Prostaglandin E(2) and myocarditis; friend or foe? *Biochem Pharmacol* 2023; 217:115813. PMID: 37722627. Request Article

Hypertension & Vascular Research Division, Department of Internal Medicine, Henry Ford Health, Detroit, MI, USA.
Hypertension & Vascular Research Division, Department of Internal Medicine, Henry Ford Health, Detroit, MI, USA; Department of Physiology, Wayne State University, Detroit, MI, USA. Electronic address: phardin1@hfhs.org.

This review article summarizes the role of prostaglandin E(2) (PGE(2)) and its receptors (EP1-EP4) as it relates to the inflammatory cardiomyopathy, myocarditis. During the COVID-19 pandemic, the onset of myocarditis in a subset of patients prompted a debate on the use of nonsteroidal anti-inflammatory drugs (NSAIDs), like ibuprofen, which act to inhibit the actions of prostaglandins. This review aims to further understanding of the role of PGE(2) in the pathogenesis or protection of the myocardium in myocarditis. Inflammatory cardiomyopathies encompass a broad spectrum of disorders, all characterized by cardiac inflammation. Therefore, for the purpose of this review, the authors have placed particular emphasis on etiologies of myocarditis where effects of PGE(2) have been documented.

Infectious Diseases

García C, Hinostroza N, Gordillo V, Inchaustegui ML, Astocondor L, Chincha O, Alejos S, Olivera M, Bojórquez-Fernández D, Concha-Velasco F, Vásquez N, Castaneda-Sabogal A, Sullón P, Fernández V, Villegas-Chiroque M, López E, Hueda-Zavaleta M, Vidaurre A, Bocángel C, Barco E, Paricahua E, **Zervos M**, Jacobs J, and Krapp F. Methicillin-Resistant Staphylococcus aureus Bloodstream Infections in Hospitalized Patients in Peru. *Am J Trop Med Hyg* 2023; Epub ahead of print. PMID: 37722664. Request Article

Instituto de Medicina Tropical Alexander von Humboldt, Universidad Peruana Cayetano Heredia, Lima, Peru.
Facultad de Medicina, Universidad Peruana Cayetano Heredia, Lima, Peru.
Departamento de Enfermedades Infecciosas, Tropicales y Dermatológicas, Hospital Cayetano Heredia, Lima, Peru.
Servicio de Infectología y Medicina Tropical, Hospital María Auxiliadora, Lima, Peru.
Departamento de Patología ClÍnica y AnatomÍa Patológica, Hospital MarÍa Auxiliadora, Lima, Peru.
Departamento de Medicina, Hospital Antonio Lorena, Cusco, Peru.
Escuela Profesional de Medicina Humana, Universidad Nacional San Antonio Abad del Cusco, Cusco, Peru.
Departamento de Apoyo al Diagnóstico, Hospital Antonio Lorena, Cusco, Peru.
Departamento de Medicina, Hospital Base Víctor Lazarte Echegaray de EsSalud, La Libertad, Peru.
Facultad de Medicina Humana, Universidad Privada Antenor Orrego, Trujillo, Peru.
Departamento de Especilaidades Médicas, Hospital Hipólito Unanue, Lima, Peru.
Departamento de Medicina, Hospital Belén de Trujillo, La Libertad, Peru.
Departamento de Áreas Clínicas, Hospital Regional Lambayeque, Lambayeque, Peru.
Departamento de Medicina Hospital Regional de Loreto Felipe Santiago Arriola Iglesias, Loreto, Peru.
Faculty of Health Sciences, Universidad Privada de Tacna, Tacna, Peru.
Departamento de Medicina, Hospital III Daniel Alcides Carrión-EsSalud Tacna, Tacna, Peru.
Departamento de Medicina, Hospital III EsSalud Chimbote, Ancash, Peru.
Departamento de Medicina Hospital Goyeneche de Arequipa, Arequipa, Peru.
Departamento de Patología Clínica, Hospital Regional II-2 José Alfredo Mendoza Olavarría, Tumbes, Peru.
Departamento de Medicina, Hospital Santa Rosa de Puerto Maldonado, Madre de Dios, Peru.
Infectious Disease Division, Henry Ford Health System, Detroit, Michigan.
Institute of Tropical Medicine, Antwerp, Belgium.
Department of Microbiology, Immunology and Transplantation, KU Leuven, Leuven, Belgium.

There is a knowledge gap in the epidemiology of methicillin-resistant Staphylococcus aureus (MRSA) causing bloodstream infections (BSIs) in Peru. Through a surveillance study in 13 hospitals of 10 Peruvian regions (2017-2019), we assessed the proportion of MRSA among S. aureus BSIs as well as the molecular typing of the isolates. A total of 166 S. aureus isolates were collected, and 36.1% of them were MRSA. Of note, MRSA isolates with phenotypic and genetic characteristics of the hospital-associated Chilean-Cordobes clone (multidrug-resistant SCCmec I, non-Panton-Valentine leukocidin [PVL] producers) were most commonly found (70%), five isolates with genetic characteristics of community-associated MRSA (CA-MRSA)-SCCmec IV, PVL-producer-(8.3%) were seen in three separate regions. These results demonstrate that hospital-associated MRSA is the most frequent MRSA found in patients with BSIs in Peru. They also show the emergence of S. aureus with genetic characteristics of CA-MRSA. Further studies are needed to evaluate the extension of CA-MRSA dissemination in Peru.

Infectious Diseases

Huber B, and **Joshi S**. CNS tuberculoma in an immunocompetent patient: A case report of multi-drug hypersensitivity to RIPE therapy. *IDCases* 2023; 33:e01886. PMID: 37674901. Full Text

Department of Infectious Disease, 2799 W Grand Blvd, Henry Ford Health, Detroit, MI 48202, USA.
Wayne State University School of Medicine, 540 E Canfield St, Detroit, MI 48201, USA.

BACKGROUND: Tuberculosis (TB) is the second leading cause of death due to an infectious disease worldwide (World Health Organization, 2022 [1]). The first line treatment of TB involves the concurrent use of four drugs: rifampin, isoniazid, pyrazinamide, and ethambutol (RIPE). Given the rising threat of multidrug resistant TB, it is crucial to understand how TB can be treated when first line treatment is not an option. CASE PRESENTATION: We report a rare case of multi-drug hypersensitivity to RIPE therapy in an immunocompetent patient with an unusual presentation of CNS tuberculoma. The patient presented to an outside hospital four months prior with weakness, numbness, imbalance, and speech difficulties. A CT of the head revealed a mass in the left parietal lobe that demonstrated chronic necrotizing granulomatous inflammation with positive cultures for M. tuberculosis. The patient was started on a regimen of rifampin 600 mg daily, isoniazid 300 mg daily, pyrazinamide 2000 mg daily, ethambutol 1200 mg daily, and pyridoxine 50 mg daily. However, the patient developed drug hypersensitivity reactions to both rifampin and ethambutol with subsequent failed desensitization to rifabutin. She was ultimately discharged from the hospital on a regimen of isoniazid, pyridoxine, pyrazinamide, and moxifloxacin with plans for outpatient follow-up. CONCLUSIONS: This case highlights a rare clinical presentation of multiple drug hypersensitivity in the setting of a CNS tuberculoma and the importance of identifying the offending agents early in the course of treatment and adjusting the drug regimen accordingly. Desensitization should be attempted, but if ineffective, then alternative drug regimens should be formulated on a case-by-case basis.

Infectious Diseases

Wang M, Ge L, Chen L, Komarow L, Hanson B, Reyes J, Cober E, Alenazi T, Zong Z, Xie Q, Liu Z, Li L, Yu Y, Gao H, Kanj SS, Figueroa J, **Herc E**, Cordova E, Weston G, Ananth Tambyah P, Garcia-Diaz J, Kaye KS, Dhar S, Munita JM, Salata RA, Vilchez S, Stryjewski ME, Villegas Botero MV, Iovleva A, Evans S, Baum K, Hill C, Kreiswirth BN, Patel R, Paterson DL, Arias CA, Bonomo RA, Chambers HF, Fowler VG, Satlin MJ, van Duin D, and Doi Y. Clinical Outcomes and Bacterial Characteristics of Carbapenem-Resistant Acinetobacter baumannii Among Patients from Different Global Regions. *Clin Infect Dis* 2023; Epub ahead of print. PMID: 37738153. Full Text

Institute of Antibiotics, Huashan Hospital, Fudan University, Shanghai, China.
Key Laboratory of Clinical Pharmacology of Antibiotics, National Health Commission of People's Republic of China, Shanghai, China.
The Biostatistics Center, George Washington University, Rockville, MD, USA.
Center for Discovery and Innovation, Hackensack Meridian Health, Nutley, NJ, USA.
Department of Medical Sciences, Hackensack Meridian School of Medicine, Nutley, NJ, USA.
Center for Infectious Diseases and Microbial Genomics, UTHealth, McGovern School of Medicine at Houston, Houston, TX, USA.

Molecular Genetics and Antimicrobial Resistance Unit, Universidad El Bosque, Bogotá, Colombia.
Department of Infectious Diseases, Cleveland Clinic, OH, USA.
College of Medicine, King Abdulaziz Medical City, Riyadh, Saudi Arabia.
Center of Infectious Diseases, West China Hospital of Sichuan University, Chengdu, China.
Department of Infectious Disease, Ruijin Hospital, Shanghai Jiaotong University, Shanghai, China.
Infectious Disease Section, Department of Internal Medicine, Peking Union Medical College Hospital, Beijing, China.
State Key Laboratory for Diagnosis and Treatment of Infectious Diseases, The First Affiliated Hospital of Medical School of Zhejiang University, Hangzhou, China.
Department of Infectious Diseases, Sir Run Shaw Hospital, Zhejiang University School of Medicine, Hangzhou, China.
Department of Infectious Diseases, Shulan Hangzhou Hospital, Hangzhou, China.
Division of Infectious Diseases, American University of Beirut Medical Center, Beirut, Lebanon.
Department of Infectious Diseases, Hospital Universitario Erasmo Meoz ESE, Cúcuta, Colombia.
Division of Infectious Diseases, Henry Ford Hospital, Detroit, MI, USA.
Infectious Diseases Unit, Hospital Cosme Argerich de Buenos Aires, Buenos Aires, Argentina.
Division of Infectious Diseases, Department of Medicine, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA.
Infectious Diseases Translational Research Programme, National University of Singapore, Singapore.
Division of Infectious Diseases, Ochsner Medical Center, New Orleans, LA, USA.
Division of Infectious Diseases, University of Michigan, Ann Arbor, MI, USA.
Division of Allergy, Immunology and Infectious Diseases, Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ, USA.
Division of Infectious Disease, School of Medicine, Wayne State University, Detroit, MI, USA.
Millennium Initiative for Collaborative Research on Bacterial Resistance (MICROB-R), Instituto de Ciencias e Innovación en Medicina, Facultad de Medicine, Clínica Alemana, Universidad del Desarrollo, Santiago, Chile.
Department of Medicine, Case Western Reserve University School of Medicine, Cleveland, OH, USA.
Center for Infectious Disease Research, Department of Microbiology and Parasitology, School of Medicine, National Autonomous University of Nicaragua, Leon, Nicaragua.
Department of Medicine and Division of Infectious Diseases, Centro de Educación Médica e Investigaciones Clínicas, Buenos Aires, Argentina.
Grupo de Resistencia Antimicrobiana y Epidemiología Hospitalaria (RAEH), Universidad El Bosque, Bogotá, Colombia.
Division of Infectious Diseases, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA.
Department of Biostatics and Bioinformatics, Milken Institute School of Public Health, George Washington University, Washington, DC, USA.
Duke Clinical Research Institute, Duke University School of Medicine, Durham, NC, USA.
Division of Clinical Microbiology, Department of Laboratory Medicine and Pathology, Mayo Clinic, Rochester, MN, USA.
Division of Public Health, Infectious Diseases and Occupational Medicine, Department of Medicine, Mayo Clinic, Rochester, MN, USA.
Department of Infectious Diseases, University of Queensland Centre for Clinical Research, Royal Brisbane and Women's Hospital, Brisbane, Queensland, Australia.
Division of Infectious Diseases, Houston Methodist Hospital and Houston Methodist Research Institute, Houston, TX, USA.
Center for Infectious Diseases Research, Houston Methodist Hospital and Houston Methodist Research Institute, Houston, TX, USA.
Case Western Reserve University VA Center for Antimicrobial Resistance and Epidemiology (Case VA CARES), Research Service, Louis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH, USA.
Department of Pharmacology, Case Western Reserve University School of Medicine, Cleveland, OH, USA.
Department of Molecular Biology and Microbiology, Case Western Reserve University School of Medicine, Cleveland, OH, USA.
Department of Biochemistry, Case Western Reserve University School of Medicine, Cleveland, OH, USA.

Department of Medicine, University of California San Francisco, San Francisco, CA, USA.
Division of Infectious Diseases, Weill Cornell Medicine, New York, NY, USA.
Division of Infectious Diseases, University of North Carolina School of Medicine, Chapel Hill, NC, USA.
Department of Microbiology and Infectious Diseases, Fujita Health University School of Medicine, Aichi, Japan.

BACKGROUND: Carbapenem-resistant Acinetobacter baumannii (CRAb) is one of the most problematic antimicrobial-resistant bacteria. We sought to elucidate the international epidemiology and clinical impact of CRAb. METHODS: In a prospective observational cohort study, 842 hospitalized patients with a clinical CRAb culture were enrolled at 46 hospitals in five global regions between 2017 and 2019. The primary outcome was all-cause mortality at 30 days from the index culture. The strains underwent whole-genome analysis. RESULTS: Of 842 cases, 536 (64%) represented infection. By 30 days, 128 (24%) of the infected patients died, ranging from 1 (6%) of 18 in Australia-Singapore to 54 (25%) of 216 in the United States and 24 (49%) of 49 in South-Central America, whereas 42 (14%) of non-infected patients died. Bacteremia was associated with a higher risk of death compared with other types of infection (40 [42%] of 96 vs. 88 [20%] of 440). In a multivariable logistic regression analysis, bloodstream infection and higher age-adjusted Charlson comorbidity index were independently associated with 30-day mortality. Clonal group 2 (CG2) strains predominated except in South-Central America, ranging from 216 (59%) of 369 in the United States to 282 (97%) of 291 in China. Acquired carbapenemase genes were carried by 769 (91%) of the 842 isolates. CG2 strains were significantly associated with higher levels of meropenem resistance, yet non-CG2 cases were over-represented among the deaths compared with CG2 cases. CONCLUSIONS: CRAb infection types and clinical outcomes differed significantly across regions. While CG2 strains remained predominant, non-CG2 strains were associated with higher mortality. CLINICALTRIALS.GOV: #NCT03646227.

Internal Medicine
Alfares K, and **Han HJ**. Neurosarcoidosis-Induced Panhypopituitarism. *Cureus* 2023; 15(8):e43169. PMID: 37692696. Full Text

Endocrinology, Diabetes, and Metabolism, King Abdulaziz University Faculty of Medicine, Jeddah, SAU.
Endocrinology, Diabetes, and Metabolism, Henry Ford Health System, Detroit, USA.
Internal Medicine, Henry Ford Health System, Detroit, USA.

Sarcoidosis is an inflammatory condition that can impact multiple organs in the body such as the lungs, skin, eyes, and, occasionally, the central nervous system. When sarcoidosis affects the nervous system, it is referred to as neurosarcoidosis and is estimated to occur in approximately 5%-15% of sarcoid patients. When neurosarcoidosis affects the pituitary gland, it can result in panhypopituitarism, which can be life-threatening. A 35-year-old male with a known diagnosis of sarcoidosis by skin biopsies presented to the hospital with altered mental status, hypernatremia, hypotension, and hypothermia. He reported symptoms of polyuria and polydipsia for several weeks before admission. Laboratory workup revealed elevated serum sodium at 167 mmol/L, high serum osmolality at 381 mOsm/kg, and low urine osmolality at 381 mOsm/kg, consistent with diabetes insipidus. Anterior pituitary hormone profile workup revealed low 8 am serum cortisol (1.9 mcg/dL) and inappropriately normal adrenocorticotropic hormone (ACTH) (34 pg/ml), low serum free testosterone (<2.5 ng/dL), low luteinizing hormone (0.7 mIU/ml), low follicular stimulating hormone (< 2.6 mIU/ml), low free T4 at 0.4 ng/dL. and inappropriately normal thyroid-stimulating hormone (TSH) at 2.77 uIU/mL. Serum prolactin was mildly elevated at 86.8 ng/mL. Angiotensin-converting enzyme level was within the normal range at 33 U/L. A diagnosis of panhypopituitarism was made. Brain MRI revealed a 3 cm mass in the suprasellar region involving the hypothalamus and bilateral optic tracts with a mass effect on the anterior third ventricle. No discrete pituitary or stalk lesion was identified. A ventriculostomy tube was placed for developing hydrocephalus. A biopsy of the suprasellar mass revealed non-caseating granuloma, confirming neurosarcoidosis. Treatment was initiated with high-dose IV corticosteroids to manage secondary adrenal insufficiency and neurosarcoidosis. He was also started on IV desmopressin and IV levothyroxine to manage his diabetes insipidus and central hypothyroidism. He was transitioned to oral therapy upon discharge. Panhypopituitarism secondary to neurosarcoidosis is a rare presentation that can occur due to the infiltration of the pituitary gland or the infiltration of the hypothalamus affecting the hypothalamic-pituitary

axis. Neurosarcoidosis should be considered a differential when evaluating patients with symptoms consistent with panhypopituitarism. Prompt diagnosis and initiation of corticosteroids and deficient hormones can be lifesaving.

Internal Medicine
Azam M, Shoukfeh R, Fried S, **Rehman S**, Rehman W, Rehman R, and Mehregan D. Cutaneous metastasis of gastric cancer is associated with a poor prognosis: a systematic review. *Int J Dermatol* 2023; Epub ahead of print. PMID: 37723410. Full Text

Oakland University William Beaumont School of Medicine, Rochester, MI, USA.
Wayne State University School of Medicine, Detroit, MI, USA.
Department of Internal Medicine, Henry Ford Hospital, Detroit, MI, USA.
University of Michigan-Dearborn, Dearborn, MI, USA.
Department of Dermatology, Wayne State University School of Medicine, Detroit, MI, USA.

Internal Medicine
Cherabuddi MR, **Shadid AM**, **Obeidat L**, **Jesse M**, and **Bradley P**. Measuring disparities in virtual healthcare and outcomes in chronic obstructive pulmonary disease patients during the COVID-19 pandemic. *J Telemed Telecare* 2023; Epub ahead of print. PMID: 37753613. Full Text

Department of Internal Medicine, Henry Ford Hospital, Detroit, MI, USA. RINGGOLD: 24016
Henry Ford Transplant Institute, Henry Ford Health, Detroit, MI, USA. RINGGOLD: 2971
Department of Pulmonary and Critical Care Medicine, Henry Ford Hospital, Detroit, MI, USA. RINGGOLD: 24016

INTRODUCTION: The use of virtual healthcare increased with the COVID-19 pandemic, even among chronic obstructive pulmonary disease (COPD) patients. We measured disparities in virtual compared to traditional healthcare and outcomes in COPD patients during the pandemic. METHODS: This study retrospectively identified adult patients with virtual or in-person primary care encounters at a large, Midwestern hospital system between March 1, 2020, and June 30, 2020. Data regarding age, sex, race, smoking, area deprivation index (ADI), COPD diagnosis, visit type (office, telephone, video, E-visit, virtual, or hybrid of office and virtual), and time to hospital admission in the following 12 months were collected. Analysis was performed using chi-square, analysis of variance, Kruskal-Wallis rank sum, and Cox proportional modeling. RESULTS: This study identified 86,715 patients. Of those, 4702 had COPD and were more likely to be 65 years or older, White, have higher ADI, use telephone or hybrid visits compared to the rest of the study population and majority had smoking history. Office, telephone, and hybrid visits were used frequently, consistently seen across sex, race, ADI, and smoking categories. Increasing age was associated with increased use of office and telephone visits, and decreased use of video visits. Higher ADI was associated with telephone visits, and lower ADI was associated with video visits. There were no significant differences in overall, COPD, or COVID-19 hospital admission rates across visit types. DISCUSSION: Complex disparities in utilizing traditional healthcare are also reflected in virtual healthcare in COPD patients, and do not significantly affect hospital admissions.

Internal Medicine
Hoffert MM, **Pfeiffer L**, **Hepke M**, **Brink W**, **Newman J**, **Passalacqua KD**, and **Baker-Genaw K**. Gathering Trainee Feedback to Improve Programs With Low Annual ACGME Survey Content Area Compliance: A Pilot Study. *Acad Med* 2023; Epub ahead of print. PMID: 37748087. Full Text

M.M. Hoffert is director, Medical Education Instructional Design and Learning Systems & Resources, Graduate Medical Education, Henry Ford Health, Detroit, Michigan; ORCID: https://orcid.org/0000-0002-4941-4226.
L. Pfeiffer is manager, Accreditation, Medical Education, Graduate Medical Education, Henry Ford Health, Detroit, Michigan.
M. Hepke is manager, Accreditation, Medical Education, Graduate Medical Education, Henry Ford Health, Detroit, Michigan.

W. Brink is medical education coordinator, Graduate Medical Education, Henry Ford Health, Detroit, Michigan.
J. Newman is manager, Medical Education Instructional Design and Learning Systems & Resources, Graduate Medical Education, Henry Ford Health, Detroit, Michigan; ORCID: https://orcid.org/0000-0001-7815-5852.
K.D. Passalacqua is lead, Medical Writing and Education, Graduate Medical Education, Henry Ford Health, Detroit, Michigan; ORCID: https://orcid.org/0000-0002-2672-3261.
K. Baker-Genaw is director, Medical Education, and designated institutional officer, Graduate Medical Education and Department of Internal Medicine, Henry Ford Health, Detroit, Michigan,; ORCID: https://orcid.org/0000-0003-1552-2808.

PROBLEM: Systematically investigating annual Accreditation Council for Graduate Medical Education (ACGME) Resident/Fellow Survey results by directly gathering trainee feedback could uncover training program problems and clarify misunderstandings as they arise, leading to faster corrective actions and program improvement. APPROACH: The Focus Group Forum (FGF) was created based on the utilization-focused evaluation approach to systematically gather comprehensive, high-quality, actionable trainee feedback on specific annual ACGME survey results and involve trainees in program improvement (Henry Ford Hospital, 2021). Trainees from programs with survey results indicating <80% compliance within several content areas were invited to attend FGF sessions. During FGF sessions, neutral moderators experienced in conducting focus groups and creating psychologically safe spaces and neutral scribes gathered trainee feedback on survey results through structured, iterative discussions and an anonymous electronic polling system. Summaries of FGF findings were created, combined with actual annual ACGME survey data, and used to develop recommended corrective actions and monitoring plans. OUTCOMES: In 2021, 6 training programs had survey results below the institution's compliance threshold for 4-8 of the 9 content areas. Of the 180 trainees (from the 6 programs) invited to attend an FGF session, 79 (44%) participated. Five key issues were identified: misinterpretation of several survey questions, lack of knowledge of institutional policies and procedures, perceived inability to share feedback with faculty, feelings of being overwhelmed with administrative duties, and lack of sufficient protected time for educational activities and requirements. NEXT STEPS: The authors are developing an FGF process for faculty so that all stakeholders have a voice regarding annual ACGME survey results. They are also improving scheduling processes so that feedback from experienced trainees who are leaving the institution will not be missed and developing longer-term processes for tracking outcomes since time for implementing corrective actions before the next ACGME survey is limited.

Internal Medicine
Mangal R, **Jamil M**, **Nasser Z**, and **Purtell JP**. A Case of Non-cirrhotic Portal Hypertension in a Patient With Primary Myelofibrosis Disease. *Cureus* 2023; 15(8):e44313. PMID: 37779802. Full Text

Internal Medicine, Henry Ford Health System, Detroit, USA.

Idiopathic non-cirrhotic portal hypertension can emerge due to a varied spectrum of underlying and contributory factors, presenting in the form of abdominal distention as the initial symptom encountered. Often, a patient remains asymptomatic to the underlying cause and seeks medical care for their abdominal enlargement. As the portal hypertension continues to progress, ascites begins to develop due to a history of portal vein thrombosis being sufficient to increase splanchnic blood flow in a portal hypertensive pattern. We present a rare case of ascites in a non-cirrhotic patient due to portal vein thrombus with underlying myeloproliferative disease of primary myelofibrosis.

Internal Medicine
Maraj D, **Ramanan S**, **Patel PM**, **Memon M**, and **Hawes E**. Persistent Heart Failure Despite Medical Therapy Leading to a Diagnosis of Cardiac Amyloidosis. *Cureus* 2023; 15(8):e43547. PMID: 37719596. Full Text

Internal Medicine, Henry Ford Health System, Jackson, USA.
Medicine, Michigan State University, Lansing, USA.
Cardiology, Henry Ford Health System, Jackson, USA.

Cardiac Imaging, Henry Ford Health System, Jackson, USA.

Cardiac amyloidosis is restrictive cardiomyopathy, commonly classified as either light-chain amyloidosis (AL) or transthyretin amyloidosis (ATTR), which can be further subdivided into wild-type (systemic senile amyloidosis) and hereditary ATTR amyloidosis. Advanced-stage, silent, and clinically undiagnosed amyloidosis has a poor prognosis, with a survival rate of six months and up to five years. We present a 72-year-old female with a past medical history of heart failure, with preserved ejection fraction, atrial fibrillation, systemic lupus erythematosus (SLE), and stage 3b chronic kidney disease, who presented with persistent shortness of breath, lower extremity pitting edema, jugular venous distension, and dyspnea despite optimal medical therapy. The patient was diagnosed with preserved heart failure in the past and was on guideline-directed medical therapy for over five years with no history of cardiac disease in the family. The patient's previous echocardiogram revealed an ejection fraction of 65%. In order to determine the etiology of the patient's cardiomyopathy, she underwent cardiac magnetic resonance imaging (CMR), monoclonal gammopathy testing, and a Technetium pyrophosphate (99mTc-PYP) scintigraphy, of which the latter two were unrevealing. The CMR revealed increased wall thickness and multiple segments of midmyocardial to subendocardial late gadolinium enhancement, suggestive of infiltrative disease. Due to inconclusive testing, the patient underwent an endomyocardial biopsy and was determined to have wild-type, systemic senile amyloidosis, which held a poor prognosis. The patient was started on tafamidis, a new Food and Drug Administration (FDA)-approved therapy for systemic senile amyloidosis, and was discharged on the new medication, with frequent follow-up visits scheduled. Current treatment guidelines for cardiac amyloidosis include loop diuretics and spironolactone. Medications such as beta-blockers, angiotensin-converting enzyme inhibitors, and calcium channel blockers are not clinically effective. There are currently new medications on the horizon, such as tafamidis, which stabilizes the transthyretin tetramer and reduces the formation of amyloid. This case highlighted that patients who have persistent symptoms of heart failure, despite guideline-directed medical therapy, and without a history of genetic cardiac conditions, may also have a diagnosis of cardiac amyloidosis. Cardiac amyloidosis is often misdiagnosed or diagnosed late in the disease course; therefore, there is a need for increasing awareness of early diagnosis and treatment, including new FDA-approved medications for a better chance of survival.

Neurology
Bagić AI, **Bowyer SM**, Burgess RC, Funke ME, Lowden A, Mohamed IS, Wilson T, Zhang W, Zillgitt AJ, and Tenney JR. The Role of Optically Pumped Magnetometers (OPMs) in Pre-surgical Epilepsy Evaluation Commentary of the American Clinical Magnetoencephalography Society (ACMEGS). *Epilepsia* 2023; Epub ahead of print. PMID: 37728519. Full Text

University of Pittsburgh Comprehensive Epilepsy Center (UPCEC), Department of Neurology, University of Pittsburgh Medical Center (UPMC), Pittsburgh, Pennsylvania, U.S.A.
MEG Laboratory, Henry Ford Hospital, Wayne State University, Detroit, MI, USA.
Magnetoencephalography Laboratory, Cleveland Clinic Epilepsy Center, Cleveland, Ohio, U.S.A.
Department of Pediatrics, University of Texas Health Science Center, McGovern Medical School, Houston, TX.
Division of Pediatric Neurology, UTSouthwestern Medical Center, Dallas, TX, U.S.A.
Department of Pediatrics, University of Alabama, Birmingham, AL.
Institute for Human Neuroscience, Boys Town National Research Hospital, Boys Town, NE, USA.
Minnesota Epilepsy Group, P.A., Roseville, MN.
Corewell Health William Beaumont University Hospital, Royal Oak, MI.
MEG Center, Cincinnati Children's Hospital Medical Center, Department of Pediatrics, University of Cincinnati College of Medicine, Cincinnati, Ohio, U.S.A.

Neurology
Barrington NM, Gupta N, Musmar B, Doyle D, Panico N, Godbole N, **Reardon T**, and D'Amico RS. A Bibliometric Analysis of the Rise of ChatGPT in Medical Research. *Med Sci (Basel)* 2023; 11(3). PMID: 37755165. Full Text

Chicago Medical School, Rosalind Franklin University, North Chicago, IL 60064, USA.

School of Osteopathic Medicine, Campbell University, Lillington, NC 27546, USA.
Faculty of Medicine and Health Sciences, An-Najah National University, Nablus P.O. Box 7, West Bank, Palestine.
Central Michigan College of Medicine, Mount Pleasant, MI 48858, USA.
Lake Erie College of Osteopathic Medicine, Erie, PA 16509, USA.
School of Medicine, Tulane University, New Orleans, LA 70112, USA.
Department of Neurology, Henry Ford Hospital, Detroit, MI 48202, USA.
Department of Neurosurgery, Lenox Hill Hospital, New York, NY 10075, USA.

The rapid emergence of publicly accessible artificial intelligence platforms such as large language models (LLMs) has led to an equally rapid increase in articles exploring their potential benefits and risks. We performed a bibliometric analysis of ChatGPT literature in medicine and science to better understand publication trends and knowledge gaps. Following title, abstract, and keyword searches of PubMed, Embase, Scopus, and Web of Science databases for ChatGPT articles published in the medical field, articles were screened for inclusion and exclusion criteria. Data were extracted from included articles, with citation counts obtained from PubMed and journal metrics obtained from Clarivate Journal Citation Reports. After screening, 267 articles were included in the study, most of which were editorials or correspondence with an average of 7.5 +/- 18.4 citations per publication. Published articles on ChatGPT were authored largely in the United States, India, and China. The topics discussed included use and accuracy of ChatGPT in research, medical education, and patient counseling. Among non-surgical specialties, radiology published the most ChatGPT-related articles, while plastic surgery published the most articles among surgical specialties. The average citation number among the top 20 most-cited articles was 60.1 +/- 35.3. Among journals with the most ChatGPT-related publications, there were on average 10 +/- 3.7 publications. Our results suggest that managing the inevitable ethical and safety issues that arise with the implementation of LLMs will require further research exploring the capabilities and accuracy of ChatGPT, to generate policies guiding the adoption of artificial intelligence in medicine and science.

Neurology

Das S, Ahmad Z, Singh S, Singh S, Wright RE, 3rd, **Giri S**, and Kumar A. Oral administration of S-nitroso-L-glutathione (GSNO) provides anti-inflammatory and cytoprotective effects during ocular bacterial infections. *Cell Mol Life Sci* 2023; 80(10):309. PMID: 37770649. Full Text

Department of Ophthalmology, Visual and Anatomical Sciences, Wayne State University School of Medicine, 4717 St. Antoine, Detroit, MI, 48201, USA.
Department of Neurology, Henry Ford Health System, Detroit, MI, USA.
Department of Ophthalmology, Visual and Anatomical Sciences, Wayne State University School of Medicine, 4717 St. Antoine, Detroit, MI, 48201, USA. akuma@med.wayne.edu.
Department of Biochemistry, Microbiology, and Immunology, Wayne State University School of Medicine, Detroit, MI, USA. akuma@med.wayne.edu.

Bacterial endophthalmitis is a severe complication of eye surgeries that can lead to vision loss. Current treatment involves intravitreal antibiotic injections that control bacterial growth but not inflammation. To identify newer therapeutic targets to promote inflammation resolution in endophthalmitis, we recently employed an untargeted metabolomics approach. This led to the discovery that the levels of S-nitroso-L-glutathione (GSNO) were significantly reduced in an experimental murine Staphylococcus aureus (SA) endophthalmitis model. In this study, we tested the hypothesis whether GSNO supplementation via different routes (oral, intravitreal) provides protection during bacterial endophthalmitis. Our results show that prophylactic administration of GSNO via intravitreal injections ameliorated SA endophthalmitis. Therapeutically, oral administration of GSNO was found to be most effective in reducing intraocular inflammation and bacterial burden. Moreover, oral GSNO treatment synergized with intravitreal antibiotic injections in reducing the severity of endophthalmitis. Furthermore, in vitro experiments using cultured human retinal Muller glia and retinal pigment epithelial (RPE) cells showed that GSNO treatment reduced SA-induced inflammatory mediators and cell death. Notably, both in-vivo and ex-vivo data showed that GSNO strengthened the outer blood-retinal barrier during endophthalmitis. Collectively, our study

demonstrates GSNO as a potential therapeutic agent for the treatment of intraocular infections due to its dual anti-inflammatory and cytoprotective properties.

Neurology
El Ghazal N, Nakanishi H, **Martinez-Nunez AE**, Al Sabbakh NK, Segun-Omosehin OA, Bourdakos NE, Nasser M, Matar RH, Than C, **Danoun OA**, and Johnson A. The Effects of Deep Brain Stimulation on Mood and Quality of Life in Parkinson's Disease: A Systematic Review and Meta-Analysis. *Cureus* 2023; 15(8):e44177. PMID: 37753046. Full Text

Neurosurgery, St George's University of London, London, GBR.
Neurosurgery, University of Nicosia Medical School, Nicosia, CYP.
Neurology, Henry Ford Health System, Detroit, USA.
Gastroenterology and Hepatology, Mayo Clinic, Rochester, USA.
Biomedical Sciences, The University of Queensland, Brisbane, AUS.
Neurological Institute, Northshore Medical Group, Chicago, USA.

Deep brain stimulation (DBS) is extensively used to treat motor and non-motor symptoms in Parkinson's disease (PD). The aim of this study was to investigate the difference between subthalamic (STN) and globus pallidus internus (GPi) DBS on mood and quality of life with reference to minimal clinically important differences (MCID). A systematic literature search for articles published until November 2022 yielded 14 studies meeting the eligibility criteria, with a total of 1,088 patients undergoing STN (n=571) or GPi (n=517) stimulation. Baseline patient and clinical characteristics were comparable between the two groups. Results showed that GPi stimulation demonstrated a greater reduction in the Beck depression inventory (mean difference (MD)=1.68) than STN stimulation (MD=0.84). Hospital anxiety and depression scale showed a 2.69- and 3.48-point decrease by the GPi group in the depression and anxiety categories, respectively. The summary index (SI) of the PD questionnaire depicted a greater improvement in the GPi group from baseline (mean=41.01, 95% CI 34.89, 47.13) to follow-up (mean=30.85, 95% CI 22.08, 39.63) when compared to the STN group (baseline mean=42.43, 95% CI 34.50, 50.37; follow-up mean=34.21, 95% CI 25.43, 42.99). The emotions category also demonstrated a similar trend. However, STN stimulation showed greater reductions in motor symptoms and medication than GPi stimulation. This meta-analysis demonstrated that GPi stimulation seems to offer an advantage over STN stimulation in improving mood and quality of life in PD, but those effects must be further validated by larger studies.

Neurology
Elrefaey A, and **Memon AB**. Painful Small Fiber Neuropathy Associated With Teriflunomide: A Case Series and Literature Review Related to Teriflunomide and Leflunomide. *Cureus* 2023; 15(9):e45079. PMID: 37705563. Full Text

Neurology, Faculty of Medicine, Ain Shams University, Cairo, EGY.
Neurology, John D. Dingell VA Medical Center, Detroit, USA.
Neurology, Wayne State University School of Medicine, Detroit, USA.
Neurology, Henry Ford Health, Detroit, USA.

Teriflunomide and its prodrug, leflunomide, are disease-modifying medications used to treat relapsing-remitting multiple sclerosis (RRMS) and rheumatoid arthritis (RA), respectively. Peripheral neuropathy is a rare side effect associated with both medications, although the incidence rate and exact pathological mechanism remain unknown. We present a retrospective case series of three patients with RRMS, who developed painful small fiber neuropathy at various timeframes (<6 months, one year, and four years, respectively) while on teriflunomide treatment (14 mg/day); we also engage in a literature review of small and large fiber neuropathy associated with teriflunomide and leflunomide use. All three patients developed small fiber neuropathy following teriflunomide exposure. Laboratory workup was negative for metabolic, infectious, vitamin deficiency-related, and autoimmune etiologies, except for one patient who had chronic metabolic syndromes (impaired glucose, hyperlipidemia) before medication intake. However, the patient developed neuropathy following teriflunomide treatment. Electrophysiological findings were negative for large fiber neuropathy in all three patients with positive skin biopsy, with reduced epidermal nerve fiber density (ENFD) in two of the three patients. Teriflunomide was discontinued in all cases, after

which symptoms stabilized. Current literature on leflunomide supports a direct neurotoxic effect or buildup of toxic intermediates from uridine synthesis inhibition. Cessation of teriflunomide use in the described cases resulted in symptom stabilization. Early recognition and treatment may lead to good clinical outcomes in these patients.

Neurology
Poisson LM, **Kaur N**, **Felicella MM**, and **Singh J**. System-based integrated metabolomics and microRNA analysis identifies potential molecular alterations in human X-linked cerebral Adrenoleukodystrophy brain. *Hum Mol Genet* 2023; Epub ahead of print. PMID: 37656183. Request Article

Department of Public Health Science, Henry Ford Hospital, Detroit 48202, MI, USA.
Department of Neurology, Henry Ford Hospital, Detroit, 48202, MI, USA.
Department of Pathology, Henry Ford Hospital, Detroit, 48202, MI, USA.

X-linked adrenoleukodystrophy is a severe demyelinating neurodegenerative disease mainly affecting males. The severe cerebral adrenoleukodystrophy (cALD) phenotype has a poor prognosis and underlying mechanism of onset and progression of neuropathology remains poorly understood. In this study we aim to integrate metabolomic and microRNA (miRNA) datasets to identify variances associated with cALD. Postmortem brain tissue samples from five healthy controls (CTL) and five cALD patients were utilized in this study. White matter from ALD patients was obtained from normal-appearing areas, away from lesions (NLA) and from the periphery of lesions- plaque shadow (PLS). Metabolomics was performed by gas chromatography coupled with time-of-flight mass spectrometry and miRNA expression analysis was performed by next generation sequencing (RNAseq). Principal component analysis revealed that among the three sample groups (CTL, NLA and PLS) there were 19 miRNA, including several novel miRNA, of which 17 were increased with disease severity and 2 were decreased. Untargeted metabolomics revealed 13 metabolites with disease severity-related patterns with 7 increased and 6 decreased with disease severity. Ingenuity pathway analysis of differentially altered metabolites and miRNA comparing CTL with NLA and NLA with PLS, identified several hubs of metabolite and signaling molecules and their upstream regulation by miRNA. The transomic approach to map the crosstalk between miRNA and metabolomics suggests involvement of specific molecular and metabolic pathways in cALD and offers opportunity to understand the complex underlying mechanism of disease severity in cALD.

Neurology
Rashid F, Ghimire S, Mangalam AK, and **Giri S**. A UPLC-MS/MS Based Rapid, Sensitive, and Non-Enzymatic Methodology for Quantitation of Dietary Isoflavones in Biological Fluids. *Molecules* 2023; 28(18). PMID: 37764503. Full Text

Department of Neurology, Henry Ford Health, Detroit, MI 48202, USA.
Department of Pathology, University of Iowa, Iowa City, IA 52242, USA.

Dietary isoflavones, a type of phytoestrogens, have gained importance owing to their health-promoting benefits. However, the beneficial effects of isoflavones are mediated by smaller metabolites produced with the help of gut bacteria that are known to metabolize these phytoestrogenic compounds into Daidzein and Genistein and biologically active molecules such as S-Equol. Identifying and measuring these phytoestrogens and their metabolites is an important step towards understanding the significance of diet and gut microbiota in human health and diseases. We have overcome the reported difficulties in quantitation of these isoflavones and developed a simplified, sensitive, non-enzymatic, and sulfatases-free extraction methodology. We have subsequently used this method to quantify these metabolites in the urine of mice using UPLC-MS/MS. The extraction and quantitation method was validated for precision, linearity, accuracy, recoveries, limit of detection (LOD), and limit of quantification (LOQ). Linear calibration curves for Daidzein, Genistein, and S-Equol were set up by performing linear regression analysis and checked using the correlation coefficient ($r(2) > 0.995$). LOQs for Daidzein, Genistein, and S-Equol were 2, 4, and 2 ng/mL, respectively. This UPLC-MS/MS swift method is suitable for quantifying isoflavones

and the microbial-derived metabolite S-Equol in mice urine and is particularly useful for large numbers of samples.

Neurology
Zhou Y, Bhatt H, Mojica CA, **Xin H**, Pessina MA, Rosene DL, Moore TL, and Medalla M. Mesenchymal-derived extracellular vesicles enhance microglia-mediated synapse remodeling after cortical injury in aging Rhesus monkeys. *J Neuroinflammation* 2023; 20(1):201. PMID: 37660145. Full Text

Department of Anatomy & Neurobiology, Boston University, Chobanian & Avedisian School of Medicine, Boston, MA, 02118, USA.
Department of Neurology, Henry Ford Health Systems, Detroit, MI, 48202, USA.
Center for Systems Neuroscience, Boston University, Boston, MA, 02215, USA.
Department of Anatomy & Neurobiology, Boston University, Chobanian & Avedisian School of Medicine, Boston, MA, 02118, USA. mmedalla@bu.edu.
Center for Systems Neuroscience, Boston University, Boston, MA, 02215, USA. mmedalla@bu.edu.

Understanding the microglial neuro-immune interactions in the primate brain is vital to developing therapeutics for cortical injury, such as stroke or traumatic brain injury. Our previous work showed that mesenchymal-derived extracellular vesicles (MSC-EVs) enhanced motor recovery in aged rhesus monkeys following injury of primary motor cortex (M1), by promoting homeostatic ramified microglia, reducing injury-related neuronal hyperexcitability, and enhancing synaptic plasticity in perilesional cortices. A focal lesion was induced via surgical ablation of pial blood vessels over lying the cortical hand representation of M1 of aged female rhesus monkeys, that received intravenous infusions of either vehicle (veh) or EVs 24 h and again 14 days post-injury. The current study used this same cohort to address how these injury- and recovery-associated changes relate to structural and molecular interactions between microglia and neuronal synapses. Using multi-labeling immunohistochemistry, high-resolution microscopy, and gene expression analysis, we quantified co-expression of synaptic markers (VGLUTs, GLURs, VGAT, GABARs), microglia markers (Iba1, P2RY12), and C1q, a complement pathway protein for microglia-mediated synapse phagocytosis, in perilesional M1 and premotor cortices (PMC). We compared this lesion cohort to age-matched non-lesion controls (ctr). Our findings revealed a lesion-related loss of excitatory synapses in perilesional areas, which was ameliorated by EV treatment. Further, we found region-dependent effects of EVs on microglia and C1q expression. In perilesional M1, EV treatment and enhanced functional recovery were associated with increased expression of C1q + hypertrophic microglia, which are thought to have a role in debris-clearance and anti-inflammatory functions. In PMC, EV treatment was associated with decreased C1q + synaptic tagging and microglia-spine contacts. Our results suggest that EV treatment may enhance synaptic plasticity via clearance of acute damage in perilesional M1, and thereby preventing chronic inflammation and excessive synaptic loss in PMC. These mechanisms may act to preserve synaptic cortical motor networks and a balanced normative M1/PMC synaptic function to support functional recovery after injury.

Neurosurgery
Abdullah I, Javed A, Malik KM, and **Malik G**. DeepInfusion: A dynamic infusion based-neuro-symbolic AI model for segmentation of intracranial aneurysms. *Neurocomputing* 2023; 551. PMID: Not assigned. Request Article

The detection and segmentation of cerebral aneurysms is a crucial step in the development of a clinical decision support system for estimating aneurysm rupture risk. However, accurately identifying and segmenting regions of interest in two-dimensional (2D) medical images is often challenging, particularly when using deep learning (DL) methods on small datasets with limited annotated data. The accuracy of DL approaches is often affected by the availability of large, annotated training datasets that are required for effective deep learning. Additionally, when using DL to differentiate aneurysms from arterial loops in 2D DSA images, DL can fail to detect aneurysms in areas where dye concentration is low. To address these issues and enhance the reliability and accuracy of aneurysm detection and segmentation methods, incorporating medical expert-advised, hand-crafted features can provide a clinical perspective to DL methods. This approach can help to improve the performance of DL methods by providing additional information that is not captured in the data. To this end, a novel Neuro-symbolic AI-based DeepInfusion

model is proposed which allows for the infusion of human intellect through hand-crafted features into deep neural networks (DNNs), thus combining the strengths of DL with the knowledge and expertise of medical professionals. The proposed approach includes a novel technique for dynamic layer selection and feature weight adjustment during the model infusion process. The performance of the DeepInfusion model is evaluated on an in-house prepared dataset of 409 DSA images, and experimental results demonstrate the effectiveness of the proposed method for the segmentation of cerebral aneurysms. The model achieves an IOU score of 96.76% and an F1-score of 94.15% on unseen DSA images. The model is also tested on two publicly available datasets of Kvasir-SEG polyp and DRIVE for vessel segmentation of retinal images. The results show a significant improvement compared to existing methods, which indicates the generalizability of the approach in medical segmentation. The complete code for DeepInfusion is available on our GitHub repository at https://github.com/smileslab/deep-infusion/blob/main/deepinfusion.ipynb.

Neurosurgery

Ahluwalia MS, **Rogers LR**, Chaudhary R, Newton H, Ozair A, Khosla AA, Nixon AB, Adams BJ, Seon BK, Peereboom DM, and Theuer CP. Endoglin inhibitor TRC105 with or without bevacizumab for bevacizumab-refractory glioblastoma (ENDOT): a multicenter phase II trial. *Commun Med (Lond)* 2023; 3(1):120. PMID: 37684373. Full Text

Rose and Ella Burkhardt Brain Tumor and Neuro-Oncology Center, Cleveland Clinic, Cleveland, OH, USA. manmeeta@baptisthealth.net.
Miami Cancer Institute, Baptist Health South Florida, Miami, FL, USA. manmeeta@baptisthealth.net.
Herbert Wertheim College of Medicine, Florida International University, Miami, FL, USA. manmeeta@baptisthealth.net.
Department of Neurosurgery, Henry Ford Health, Detroit, MI, USA.
Division of Hematology & Oncology, University of Cincinnati, Cincinnati, OH, USA.
Department of Neurology, Ohio State University, Columbus, OH, USA.
Department of Neurology, University Hospitals Cleveland Medical Center, Cleveland, OH, USA.
Miami Cancer Institute, Baptist Health South Florida, Miami, FL, USA.
Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD, USA.
Department of Internal Medicine, William Beaumont University Hospital, Royal Oak, MI, USA.
Duke Cancer Institute, Duke University, Durham, NC, USA.
TRACON Pharmaceuticals Inc., San Diego, CA, USA.
Department of Immunology, Roswell Park Comprehensive Cancer Center, Buffalo, NY, USA.
Rose and Ella Burkhardt Brain Tumor and Neuro-Oncology Center, Cleveland Clinic, Cleveland, OH, USA.

BACKGROUND: Glioblastoma (GBM), the most lethal primary brain tumor, has limited treatment options upon recurrence after chemoradiation and bevacizumab. TRC105 (carotuximab), a chimeric anti-endoglin (CD105) antibody, inhibits angiogenesis and potentiates activity of VEGF inhibitor bevacizumab in preclinical models. This study sought to assess safety, pharmacokinetics, and efficacy of TRC105 for bevacizumab-refractory GBM. METHODS: We conducted a pre-registered (NCT01564914), multicenter, open-label phase II clinical trial (ENDOT). We administered 10 mg/kg TRC105 monotherapy (first cohort) in adults with GBM and radiographic progression following radiation, temozolomide and bevacizumab therapy. Primary outcome was median time-to-progression (TTP), amended after first cohort's enrollment to median overall survival (mOS). Secondary outcomes were objective response rate, safety and tolerability, and progression-free survival (PFS). RESULTS: 6 patients were enrolled in TRC105 monotherapy cohort. Median TTP and PFS of 5 evaluable patients receiving monotherapy was 1.4 months, in whom plasma VEGF-A levels were elevated post-therapy. Lack of response led to protocol amendment, and second cohort's addition of bevacizumab+TRC105 with primary endpoint of mOS. 16 patients were enrolled in bevacizumab+TRC105 cohort. mOS of 15 evaluable patients was 5.7 (95%CI: 4.2-9.8) months. All 22 patients had measurable disease at baseline. Median PFS of 14 evaluable patients receiving bevacizumab+TRC105 was 1.8 months (95%CI 1.2-2.1). Serum TRC105 was measurable above target concentration of 25 ug/mL in all evaluable patients. Study medications were well-tolerated in both cohorts. Combined administration did not potentiate known toxicities of either medication, with cerebral hemorrhage not observed. CONCLUSIONS: Single-agent TRC105 lacks activity

in bevacizumab-refractory GBM, possibly secondary to upregulated VEGF-A expression. Meaningful mOS in bevacizumab+TRC105 cohort warrants further trials to investigate efficacy of combination therapy. Glioblastoma is an aggressive and lethal brain tumor, with patients typically expected to survive for 14 to 16 months after diagnosis. Nearly all patients experience tumor recurrence once conventional treatment strategies fail, after which a drug called bevacizumab is used. However, subsequent treatment options are extremely limited. We performed a clinical trial in which we investigated how safe and effective a new drug called TRC105 (carotuximab) is in patients who no longer respond to chemotherapy, radiotherapy or bevacizumab. We tested TRC105 both with and without bevacizumab, since TRC105 might enhance the activity of bevacizumab. We found that patients survived for an average of 5.7 months when given TRC105 and bevacizumab in combination. These findings suggest that further clinical trials are needed to confirm whether or not this combination therapy is a useful approach in patients with glioblastoma recurrence.

Neurosurgery
Ali R, and **Schwalb JM**. History and Future of Spinal Cord Stimulation. *Neurosurgery* 2023; Epub ahead of print. PMID: 37681953. Full Text

Department of Neurological Surgery, Mayo Clinic, Rochester, Minnesota, USA.
Department of Neurological Surgery, Henry Ford Medical Group, West Bloomfield, Michigan, USA.

Spinal cord stimulation (SCS) is a surgical treatment for chronic neuropathic pain refractory to medical management. An SCS system comprised one or more leads implanted in the epidural space, typically connected to an implantable pulse generator. This review discusses the history, indications, surgical technique, technological advances, and future directions of SCS.

Neurosurgery
Herrgott GA, **Snyder JM**, **She R**, **Malta TM**, **Sabedot TS**, **Lee IY**, **Pawloski J**, Podolsky-Gondim GG, **Asmaro KP**, **Zhang J**, **Cannella CE**, **Nelson K**, **Thomas B**, **deCarvalho AC**, **Hasselbach LA**, **Tundo KM**, **Newaz R**, **Transou A**, **Morosini N**, **Francisco V**, **Poisson LM**, **Chitale D**, **Mukherjee A**, **Mosella MS**, **Robin AM**, **Walbert T**, **Rosenblum M**, **Mikkelsen T**, **Kalkanis S**, Tirapelli DPC, Weisenberger DJ, Carlotti CG, Jr., **Rock J**, **Castro AV**, and **Noushmehr H**. Detection of diagnostic and prognostic methylation-based signatures in liquid biopsy specimens from patients with meningiomas. *Nat Commun* 2023; 14(1):5669. PMID: 37704607. Full Text

Department of Neurosurgery, Omics Laboratory, Hermelin Brain Tumor Center, Henry Ford Health, Detroit, MI, USA.
Department of Public Health, Biostatistics, Henry Ford Health, Detroit, MI, USA.
Department of Neurosurgery, Ribeirao Preto Medical School, University of Sao Paulo, Ribeirao Preto, SP, Brazil.
Department of Pathology, Henry Ford Health, Detroit, MI, USA.
Department of Biochemistry and Molecular Medicine, Keck School of Medicine, University of Southern California, Los Angeles, CA, 90033, USA.
Department of Neurosurgery, Omics Laboratory, Hermelin Brain Tumor Center, Henry Ford Health, Detroit, MI, USA. acastro1@hfhs.org.
Department of Physiology, Michigan State University, E. Lansing, MI, USA. acastro1@hfhs.org.
Department of Neurosurgery, Omics Laboratory, Hermelin Brain Tumor Center, Henry Ford Health, Detroit, MI, USA. hnoushm1@hfhs.org.
Department of Physiology, Michigan State University, E. Lansing, MI, USA. hnoushm1@hfhs.org.

Recurrence of meningiomas is unpredictable by current invasive methods based on surgically removed specimens. Identification of patients likely to recur using noninvasive approaches could inform treatment strategy, whether intervention or monitoring. In this study, we analyze the DNA methylation levels in blood (serum and plasma) and tissue samples from 155 meningioma patients, compared to other central nervous system tumor and non-tumor entities. We discover DNA methylation markers unique to meningiomas and use artificial intelligence to create accurate and universal models for identifying and predicting meningioma recurrence, using either blood or tissue samples. Here we show that liquid biopsy

is a potential noninvasive and reliable tool for diagnosing and predicting outcomes in meningioma patients. This approach can improve personalized management strategies for these patients.

Neurosurgery
Salim B, Abdenour S, Oualid C, Marwani HM, Sami R, Aljuraide NI, Althomali RH, Rahman MM, **Ali MM**, and El Bouz MA. Three-dimensional transient CFD modeling of multiple finned aluminum foam heat sinks in a horizontal channel. *Alex Eng J* 2023; 78:426-437. PMID: Not assigned. Full Text

Finned metal foam heat sinks are well-known because of their excellent performance in cooling of powered electronics. In this study, three-dimensional transient numerical simulations of finned aluminum foam heat sinks in a forced convection of air were carried out using commercial COMSOL. The geometry under consideration consists of an array of finned aluminum foam heat sinks mounted on heater blocks and placed on a plate in a horizontal channel. Heat sink aluminum foam regions were considered as porous media with a local non-equilibrium thermal model to evaluate thermal characteristics, while the Forchheimer-Brinkman extended Darcy model is considered for the flow analysis. Our main concern in the present study is to evaluate the transient thermal–hydraulic behavior and the cooling performance under constant flux heat sources while varying the Reynolds number and variable morphological parameters of the aluminum foam, i.e., porosity () varied from 0.85 to 0.95. The thermal performance ratio and the average Nusselt number of the finned aluminum foam heat sinks are 23.14% and 30%, respectively, larger than the finned aluminum heat sinks. As the Reynolds number increases, the thermal characteristics are enhanced, and the pressure drop is increased. An increase in porosity causes a reduction in heat transfer rate and an elevation of pressure drop.

Nursing
Iseler J, Long T, **Barach M**, McClelland ML, and Saunders MM. Credentialed and Privileged Clinical Nurse Specialists. *Clin Nurse Spec* 2023; 37(5):218-222. PMID: 37595195. Full Text

Author Affiliations: Clinical Nurse Specialist, Program Director, Assistant Professor, and Clinical Nurse Specialist (Dr Iseler), Michigan State University, East Lansing; Assistant Professor (Dr Long), University of Detroit Mercy, Michigan; Clinical Nurse Specialist (Dr Long), Henry Ford Macomb Hospital, Clinton Township, Michigan; Clinical Nurse Specialist (Mrs Barach), Supportive Care, Henry Ford West Bloomfield Hospital, Michigan; and Professor (Dr McClelland), College of Health Professions, and Clinical Coordinator, CNS Program; and Professor and Graduate Coordinator (AG-CNS) (Dr Saunders), and Adult-Gerontology Clinical Nurse Specialist, On-line Programs, University of Detroit Mercy, Bloomfield Hills, Michigan.

PURPOSE/OBJECTIVES: The purpose of this article is to illustrate, using exemplars, the practice of clinical nurse specialists (CNSs) in Michigan who are credentialed and privileged as providers by hospital/healthcare agencies to practice in acute inpatient and ambulatory settings. DESCRIPTION: The CNS provides expert specialty direct patient care to improve patient outcomes. They hold a graduate degree as a CNS, are professionally certified as a CNS in a specialty practice population, and are licensed or otherwise recognized to practice as an advanced practice nurse by the state nursing practice regulatory agency. OUTCOME: The exemplars illustrate CNS practice as an independent provider within a health system. CONCLUSION: Hospital-based credentialing and privileging facilitates CNS practice within the full scope of practice authority that consists of education, certification, and licensure and is a valuable contribution to cost-effective, high-quality clinical care for specialty populations.

Obstetrics, Gynecology and Women's Health Services
Ayyash M, **Goyert G**, **Pitts D**, **Khangura R**, **Garcia R**, **Jacobsen G**, and **Shaman M**. Provider adherence to aspirin prophylaxis prescription guidelines for preeclampsia. *Pregnancy Hypertens* 2023; 34:1-4. PMID: 37696232. Full Text

Department of Obstetrics and Gynecology, Henry Ford Health, Detroit, MI, United States. Electronic address: mariam.ayyash@gmail.com.
Division of Maternal and Fetal Medicine, Department of Obstetrics and Gynecology, Henry Ford Health, Detroit, MI, United States.

Department of Public Health Sciences, Henry Ford Health, Detroit, MI, United States.

OBJECTIVE: To evaluate provider adherence to aspirin prophylaxis prescription guidelines for patients at risk. STUDY DESIGN: A retrospective chart review was performed at Henry Ford Health (HFH) between October 2015 and December 2020. In October 2015, low-dose aspirin was recommended for women who met high risk criteria for preeclampsia at HFH; in February 2019, aspirin recommendation expanded to include women who met either moderate or high-risk criteria. A total of 46,016 pregnancies occurred between Oct 2015 and Dec 2020 of which 15,167 (33.0%) met high and moderate risk criteria. RESULTS: From the population at risk, 1,255 (8.3%) had a history of preeclampsia, 2,534 (16.7%) had a history of chronic hypertension, 1,418 (9.3%) had a history of diabetes, 7,470 (49.3%) were nulliparous, 4,038 (26.6%) were 35 years of age or older, 6,395 (42.2%) had a body mass index greater than 30 kg/m2, and 8,174 (54.5%) were African Americans. Only 630 out of 3,584 (17.6%) of women meeting the high-risk criteria for preeclampsia between Oct 2015 and Jan 2019 received low-dose aspirin and only 891 out of 5,874 (15.2%) of women meeting the high or moderate risk criteria for preeclampsia between Feb 2019 and Dec 2020 received low-dose aspirin prophylaxis. CONCLUSION: Adherence to aspirin prophylaxis guidelines was low. Most urban healthcare systems serve diverse, high-risk populations with multiple comorbidities rendering many women at risk for preeclampsia. Educational efforts to improve provider knowledge regarding this important preventative measure are indicated. Recommendation for implementing universal aspirin in such high-risk populations should also be considered.

Obstetrics, Gynecology and Women's Health Services
Ghanem AI, **Bhatnagar A**, **Elshaikh M**, **Hijaz M**, and **Elshaikh MA**. Recurrence Risk Stratification for Women With FIGO Stage I Uterine Endometrioid Carcinoma Who Underwent Surgical Lymph Node Evaluation. *Am J Clin Oncol* 2023; Epub ahead of print. PMID: 37679878. Full Text

Department of Radiation Oncology, Henry Ford Cancer Institute.
Clinical Oncology Department, University of Alexandria Faculty of Medicine, Alexandria, Egypt.
Department of Women's Health Services, Division of Gynecologic Oncology, Henry Ford Cancer Institute, Detroit, MI.

OBJECTIVE: The aim of this study was to estimate the recurrence risk based on the number of prognostic factors for patients with stage I uterine endometrioid carcinoma (EC) who underwent surgical lymph node evaluation (SLNE) and were managed with observation. METHODS: We queried our database for women with FIGO-2009 stage I EC who underwent surgical staging including SLNE. Multivariate analysis with stepwise model selection was used to determine independent risk factors for 5-year recurrence-free survival (RFS). Study groups based on risk factors were compared for RFS, disease-specific survival, and overall survival. RESULTS: A total of 706 patients were identified: median age was 60 years (range, 30 to 93 y) and median follow-up was 120 months. Median number of examined lymph nodes was 8 (range, 1 to 66). 91% were stage IA, 75% had grade 1 and lymphovascular space invasion was detected in 6%. Independent predictors of 5-year RFS included age 60 years and above (P=0.038), grade 2 (P=0.003), and grade 3 (P<0.001) versus grade 1. Five-year RFS for group 0 (age less than 60 y and grade 1) was 98% versus 92% for group 1 (either: age 60 y and older or grade 2/3) versus 84% for group 2 (both: age 60 y and above and grade 2/3), respectively (P<0.001). Five-year disease-specific survival was 100% versus 98% versus 95%, (P=0.012) and 5-year overall survival was 98% versus 90% versus 81%, for groups 0, 1, and 2, respectively (P<0.001). CONCLUSIONS: In patients with stage I EC who received SLNE and no adjuvant therapy, only age 60 years and above and high tumor grade were independent predictors of recurrence and can be used to quantify individualized recurrence risk, whereas lymphovascular space invasion was not an independent prognostic factor in this cohort.

Obstetrics, Gynecology and Women's Health Services
Kalmbach DA, **Reffi AN**, Ong JC, **Cheng P**, Walch O, **Pitts DS**, **Seymour GM**, **Hirata M**, **Roth A**, **Roth T**, and **Drake CL**. Preliminary evidence of psychological improvements and increased maternal-fetal attachment associated with a mindfulness sleep programme: secondary analysis of uncontrolled data in 11 pregnant women with insomnia disorder. *J Sleep Res* 2023; e14040. Epub ahead of print. PMID: 37691407. Full Text

Sleep Disorders & Research Center, Henry Ford Health, Detroit, Michigan, USA.
Perinatal Sleep Health Institute, Henry Ford Health, Detroit, Michigan, USA.
Department of Obstetrics, Gynecology, and Reproductive Biology, Michigan State University College of Human Medicine, East Lansing, Michigan, USA.
Department of Neurology, Center for Circadian and Sleep Medicine, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA.
Behavioral Sleep Medicine, Nox Health, Suwanee, Georgia, USA.
Department of Neurology, University of Michigan, Ann Arbor, Michigan, USA.
Arascope Inc, Falls Church, Virginia, USA.
Maternal Fetal Medicine, Henry Ford Health, Detroit, Michigan, USA.
Thriving Minds, Livonia, Michigan, USA.

Treating insomnia during pregnancy improves sleep and depressed mood. However, given well-established links between poor sleep and a broad spectrum of adverse maternal outcomes, the benefits of insomnia care may reach beyond sleep and depression. The present study evaluated the preliminary efficacy of 'Perinatal Understanding of Mindful Awareness for Sleep' (PUMAS)-a mindfulness sleep programme tailored to pregnancy that combines behavioural sleep strategies and meditation-for enhancing everyday mindfulness and maternal-fetal attachment, as well as for alleviating anxiety, repetitive thinking, and sleep-related daytime impairment. We conducted a secondary analysis of a single-arm proof-of-concept trial of 11 pregnant women with fifth edition of the Diagnostic and Statistical Manual of Mental Disorders diagnosed insomnia disorder who completed PUMAS (six sessions), which was delivered in an individual format via telemedicine video. Pre- and post-treatment outcomes included the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R), Maternal-Fetal Attachment Scale (MFAS), Generalised Anxiety Disorder seven-item survey (GAD-7), Perseverative Thinking Questionnaire (PTQ), Daytime Insomnia Symptoms Response Scale (DISRS), and the Patient-Reported Outcomes Measurement Information System Sleep-Related Impairment Scale (PROMIS-SRI). Symptom changes were evaluated with paired-samples t tests. Results showed PUMAS patients reported large increases in CAMS-R (Cohen's d(z) = 1.81) and medium-large increases in MFAS scores (Cohen's d(z) = 0.73). Moreover, PUMAS patients reported large reductions in scores on the GAD-7 (Cohen's d(z) = 1.09), PTQ (Cohen's d(z) = 1.26), DISRS (Cohen's d(z) = 1.38), and PROMIS-SRI (Cohen's d(z) = 1.53). Preliminary evidence suggests that a mindfulness-based perinatal sleep programme may benefit several domains of maternal wellbeing beyond sleep and depression. PUMAS substantially enhanced patient ratings of everyday mindfulness and maternal-fetal attachment, while reporting alleviations in anxiety, perseverative thinking, insomnia-focused rumination, and sleep-related daytime impairment.

Obstetrics, Gynecology and Women's Health Services

Keet C, Sicherer SH, Bunyavanich S, Visness C, Fulkerson PC, Togias A, Davidson W, Perry S, Hamrah S, Calatroni A, Robinson K, Dunaway L, Davis CM, Anvari S, Leong-Kee SM, Hershey GK, DeFranco E, Devonshire A, **Kim H**, **Joseph C**, **Davidson B**, Strong NK, Tsuang AJ, Groetch M, Wang J, Dantzer J, Mudd K, Aina A, Shreffler W, Yuan Q, Simmons V, Leung DYM, Hui-Beckman J, Ramos JA, Chinthrajah S, Winn V, Sindher T, Jones SM, Manning NA, Scurlock AM, Kim E, Stuebe A, Gern JE, Singh AM, Krupp J, and Wood RA. The SunBEAm birth cohort: Protocol design. *J Allergy Clin Immunol Glob* 2023; 2(3). PMID: 37771674. Full Text

Department of Pediatrics, University of North Carolina, Chapel Hill.
Icahn School of Medicine at Mount Sinai, New York.
Rho Inc, Federal Research Operations, Durham.
Division of Allergy, Immunology and Transplantation, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda.
Department of Pediatrics, Baylor College of Medicine, Houston.
Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston.
Cincinnati Children's Hospital Medical Center, Cincinnati.
University of Cincinnati, Cincinnati.
Henry Ford Health, Detroit.

Department of Pediatrics, Division of Pediatric Allergy, Immunology and Rheumatology, Johns Hopkins University School of Medicine, Baltimore.
Department of Obstetrics and Gynecology, Johns Hopkins University School of Medicine, Baltimore.
Massachusetts General Hospital, Boston.
Massachusetts General Hospital, Newton-Wellesley Hospital, Newton.
National Jewish Health, Denver.
Saint Joseph Hospital of Obstetrics and Gynecology, Denver.
Sean N. Parker Center for Allergy and Asthma Research, Stanford University, Palo Alto.
Division Maternal Fetal Medicine and Obstetrics, Stanford University, Palo Alto.
University of Arkansas for Medical Sciences and Arkansas Children's Hospital, Little Rock.
University of Arkansas for Medical Sciences, Little Rock.
Department of Obstetrics and Gynecology, University of North Carolina, Chapel Hill.
Department of Pediatrics, University of Wisconsin, Madison.
Maternal and Fetal Medicine, Obstetrics and Gynecology, SSM Health, Madison.

BACKGROUND: Food allergy (FA) and atopic dermatitis (AD) are common conditions that often present in the first year of life. Identification of underlying mechanisms and environmental determinants of FA and AD is essential to develop and implement effective prevention and treatment strategies. Objectives: We sought to describe the design of the Systems Biology of Early Atopy (SunBEAm) birth cohort. METHODS: Funded by the National Institute of Allergy and Infectious Diseases (NIAID) and administered through the Consortium for Food Allergy Research (CoFAR), SunBEAm is a US population-based, multicenter birth cohort that enrolls pregnant mothers, fathers, and their newborns and follows them to 3 years. Questionnaire and biosampling strategies were developed to apply a systems biology approach to identify environmental, immunologic, and multiomic determinants of AD, FA, and other allergic outcomes. RESULTS: Enrollment is currently underway. On the basis of an estimated FA prevalence of 6%, the enrollment goal is 2500 infants. AD is defined on the basis of questionnaire and assessment, and FA is defined by an algorithm combining history and testing. Although any FA will be recorded, we focus on the diagnosis of egg, milk, and peanut at 5 months, adding wheat, soy, cashew, hazelnut, walnut, codfish, shrimp, and sesame starting at 12 months. Sampling includes blood, hair, stool, dust, water, tape strips, skin swabs, nasal secretions, nasal swabs, saliva, urine, functional aspects of the skin, and maternal breast milk and vaginal swabs. CONCLUSIONS: The SunBEAm birth cohort will provide a rich repository of data and specimens to interrogate mechanisms and determinants of early allergic outcomes, with an emphasis on FA, AD, and systems biology.

Ophthalmology and Eye Care Services

Rezaei S, Childress A, Kaul B, Rosales KM, Newell A, and Rose S. Using Visual Arts Education and Reflective Practice to Increase Empathy and Perspective Taking in Medical Students. *MedEdPORTAL* 2023; 19:11346. PMID: 37745278. Full Text

Fourth-Year Resident, Department of Ophthalmology, Henry Ford Hospital.
Assistant Professor, Center for Medical Ethics and Health Policy, Baylor College of Medicine.
Assistant Professor, Department of Medicine, University of California, San Francisco, School of Medicine.
University Programs Specialist, Museum of Fine Arts, Houston.
Assistant Professor, Center for Educational Outreach, Baylor College of Medicine.
Associate Professor, Department of Internal Medicine, and Associate Director, Center for Professionalism, Baylor College of Medicine.

INTRODUCTION: Empathy is a critical competency for health care providers. However, empathy levels in medical students and residents have been shown to paradoxically decrease during training. Arts and humanities education and reflective practice may reduce burnout and promote empathy during medical school. METHODS: We developed and implemented an art education elective for medical students focusing on observation and reflective practice and measured its impact on empathy. Between 2017 and 2022, first-year medical students were offered an annual, 4-week elective led by art educators that featured visualization exercises and discussions on the role of bias and perspective in art interpretation. Curriculum effectiveness and impact on empathy were measured using the validated Interpersonal Reactivity Index (IRI) and self-assessments. RESULTS: One hundred twenty-eight students participated

in the elective over a 5-year period; 89 (70%) completed assessments. Students reported improvements in empathic communication, recognition of bias, and observation skills. IRI data demonstrated a significant increase in perspective taking (19.0 vs. 20.2; $p < .0125$). DISCUSSION: Participation in the elective was associated with self-reported improvements in visual observation, awareness of bias, and empathetic communication. IRI results showed that participants also demonstrated improved perspective taking. Since perspective taking is a cognitive component of empathy, we have provided some empirical evidence that arts education in medical school can promote empathic attitudes and skills.

Orthopedics/Bone and Joint Center

Ahmed M, **Suhrawardy A**, **Olszewski A**, **Rahman T**, and **Makhni EC**. Overlapping Surgery in Orthopaedics: A Review of Efficacy, Surgical Costs, Surgical Outcomes, and Patient Safety. *J Am Acad Orthop Surg* 2023; Epub ahead of print. PMID: 37738639. Full Text

From the Wayne State University School of Medicine, Detroit, MI (Ahmed and Olszewski), the Oakland University William Beaumont School of Medicine, Auburn Hills, MI (Suhrawardy), and the Department of Orthopedic Surgery, Henry Ford Health, Detroit, MI (Rahman and Makhni).

INTRODUCTION: Overlapping surgery (OS) refers to when an attending surgeon supervises two surgeries at the same time with noncritical portions of both surgeries occurring simultaneously. Limited literature reviewing OS exists in orthopaedics. Our goal is to provide insight into this practice across orthopaedic subspecialities to inform its future utilization. METHODS: A review of the literature was conducted after Preferred Reporting Items for Systematic Reviews and Meta-Analyses systematic review guidelines. All articles (630 total) were independently reviewed by two authors with a third to resolve discrepancies. Inclusion criteria encompassed any journal publication that included data on a series of orthopaedic OS. Data points sought included the type of surgery, quantity of cases, case duration, overlap time, perioperative complications, and cost. RESULTS: Eleven articles met the inclusion criteria, encompassing a total of 34,494 overlapping surgeries. The studies varied regarding setting and subspecialties included. Six studies demonstrated increased surgical times for overlap cases. Two studies found that although OS increased cost per case, it improved the overall efficiency. Ten studies tracked short-term outcomes (<90 days) and reported no increase in complications with OS. Only one study examined long-term outcomes (1 year) and found a markedly increased risk for surgical complications with OS, with higher complication rates among nonelective compared with elective cases. DISCUSSION: Current literature suggests that OS may increase surgical time, but from the 11 articles reviewed, only one demonstrates an increase in perioperative complications across orthopaedic subspecialities. OS also seems to increase costs per case; however, this is offset by the ability to perform more cases in the same period, resulting in an overall increase in the net profit. These data are consistent with studies from other surgical specialties. CONCLUSION: Although OS seems to be both safe and effective, future investigations are needed to understand the impact it has on patients and healthcare systems.

Orthopedics/Bone and Joint Center

Burdick GB, **Maier LM**, **Kuhlmann NA**, Ayoola AS, **Fathima B**, and **Muh SJ**. Clinical characteristics and long-term outcomes of septic arthritis of the native hip joint: a 20-year retrospective review. *Hip Int* 2023; Epub ahead of print. PMID: 37728010. Full Text

Department of Orthopaedic Surgery, University of Southern California, Los Angeles, CA, USA.
Department of Orthopaedic Surgery, Henry Ford Health, Detroit, MI, USA.
Department of Orthopaedic Surgery, Western Michigan University Homer Stryker MD School of Medicine, Kalamazoo, MI, USA.

BACKGROUND: The primary purpose of this retrospective case series was to describe the prevalence and outcomes of single-stage hip arthroplasty in patients who were previously treated for septic arthritis of the native hip at our institution over a 20-year period. This study also examined rates of persistent or recurrent infection, reoperation, and mortality for septic arthritis of the native hip. METHODS: Adult patients treated for septic arthritis of the native hip at our institution from 1995 to 2015 were retrospectively identified. Exclusion criteria included age <18 years, missing or incomplete medical

records, treatment at an outside institution, and prior surgery of the hip. RESULTS: 97 patients were included in this study. 3 patients (3.1%) who were previously treated for septic arthritis of the native hip underwent single-stage hip arthroplasty an average of 40 ± 25 months from the date of infection. 3 of the 18 (16.7%) patients who were treated with resection arthroplasty underwent second-stage joint reconstruction. There were no cases of periprosthetic joint infection (PJI). 1 patient who underwent single-stage arthroplasty experienced implant-induced metallosis, necessitating removal of the implant. There were no other cases of revision arthroplasty. CONCLUSIONS: The prevalence of single-stage hip arthroplasty in patients with a history of septic arthritis of the native hip joint was 3.1%, which is higher than the prevalence of hip arthroplasty in the United States general population, suggesting that a history of septic arthritis may increase the risk of requiring hip arthroplasty. In the small number of patients who went on to receive a hip replacement, there were no reported cases of PJI. This study suggests that hip arthroplasty is a viable option for patients with symptomatic osteoarthritis and a history of septic arthritis of their hip.

Orthopedics/Bone and Joint Center

Castle JP, Khalil LS, Tramer JS, Huyke-Hernández FA, Haddad J, **Fife J**, Esho Y, **Gasparro MA**, **Moutzouros V**, and **Lynch TS**. Indications for Surgery, Activities After Surgery, and Pain Are the Most Commonly Asked Questions in Anterior Cruciate Ligament Injury and Reconstruction. *Arthrosc Sports Med Rehabil* 2023; 5(5):100805. PMID: 37753188. Full Text

Department of Orthopaedic Surgery, Henry Ford Hospital, Detroit, Michigan, U.S.A.
Department of Orthopaedic Surgery, McLaren Hospital, Flint, Michigan, U.S.A.
Department of Orthopaedic Surgery, Division of Sports Medicine, Cleveland Clinic Foundation, Cleveland, Ohio, U.S.A.
Department of Orthopaedics, Northwell Health Huntington Hospital, Huntington, New York, U.S.A.
Michigan State University College of Osteopathic Medicine, East Lansing, Michigan, U.S.A.
Oakland University William Beaumont School of Medicine, Rochester, Michigan, U.S.A.

PURPOSE: To leverage Google's search algorithms to summarize the most commonly asked questions regarding anterior cruciate ligament (ACL) injuries and surgery. METHODS: Six terms related to ACL tear and/or surgery were searched on a clean-installed Google Chrome browser. The list of questions and their associated websites on the Google search page were extracted after multiple search iterations performed in January of 2022. Questions and websites were categorized according to Rothwell's criteria. The Journal of the American Medical Association (JAMA) Benchmark criteria were used to grade website quality and transparency. Descriptive statistics were provided. $\chi(2)$ and Student t-tests identified for categorical differences and differences in JAMA score, respectively (significance set at $P < .05$). RESULTS: A total of 273 unique questions associated with 204 websites were identified. The most frequently asked questions involved Indications/Management (20.2%), Specific Activities (15.8%), and Pain (10.3%). The most common websites were Medical Practice (27.9%), Academic (23.5%), and Commercial (19.5%). In Academic websites, questions regarding Specific Activities were seldom included (4.7%) whereas questions regarding Pain were frequently addressed (39.3%, $P = .027$). Although average JAMA score was relatively high for Academic websites, the average combined score for medical and governmental websites was lower ($P < .001$) than nonmedical websites. CONCLUSIONS: The most searched questions on Google regarding ACL tears or surgery related to indications for surgery, pain, and activities postoperatively. Health information resources stemmed from Medical Practice (27.9%) followed by Academic (23.5%) and Commercial (19.5%) websites. Medical websites had lower JAMA quality scores compared with nonmedical websites. CLINICAL RELEVANCE: These findings presented may assist physicians in addressing the most frequently searched questions while also guiding their patients to greater-quality resources regarding ACL injuries and surgery.

Orthopedics/Bone and Joint Center

Fisk F, Oitment C, **Taliaferro K**, and Pahuta MA. The Hip Center Rule Can be Used to Decide if Measured Pelvic Incidence is Accurate. *Global Spine J* 2023; 13(7):1787-1792. PMID: 34658284. Full Text

Department of Orthopaedic Surgery, Henry Ford Health System, Detroit, MI, USA. RINGGOLD: 2971

Division of Orthopaedic Surgery, McMaster University, Hamilton, ON, Canada. RINGGOLD: 3710

STUDY DESIGN: Simulation study. OBJECTIVE: Pelvic incidence (PI) should be considered during surgical planning. The ideal patient position with both hip centers perfectly aligned for a lateral radiograph is rarely obtained. It has been suggested that a radiograph with axial and coronal rotation up to 20° is acceptable to obtain a measured PI within 6 degrees of the actual PI. We seek to: (1) evaluate the effect of variations in PI and patient malpositioning on measured vs true PI, and (2) determine whether the presence of one hip center within the bony acetabular rim of the contralateral hip can serve as a simple clinical decision rule on the accuracy of measured PI. METHODS: Published anthropometric three-dimensional pelvic landmark coordinates were used in this study. Radiographic projections were generated using linear algebra for combinations of axial and coronal rotation from -20° to +20°. True and measured PIs were compared. RESULTS: Rotation to 20° cannot be uniformly accepted as decision rule. Pelvises with higher PIs are more sensitive to malpositioning with greater PI deviation with smaller amounts of rotation. Diagnostic performance of the hip center rule demonstrated a sensitivity of 25.58% and a specificity of 100.00%. CONCLUSIONS: Rather than assessing the quality of radiographs for PI measurement by magnitude of malpositioning, we recommend clinicians use the "hip center rule." As long as at least one hip center is contained within the bony acetabular rim of the contralateral hip, there is high confidence that measured PI will be within 6° of true PI.

Orthopedics/Bone and Joint Center
Geers BA, and **Bishai SK**. Chronic Midsubstance Patellar Tendon and Retinacular Rupture: Primary Repair Enhancement Using Bioinductive Implant Augmentation. *Arthrosc Tech* 2023; 12(9):e1595-e1600. PMID: 37780659. Full Text

Henry Ford Health, Clinton Twp, Michigan, U.S.A.

Midsubstance tears of the patellar tendon are uncommon and present a difficult injury to treat. If left untreated, these can be debilitating injuries for patients and leave them with an overall lack of function in the injured extremity. Compared to a proximal or distal patellar tendon rupture, midsubstance tears rely on tendon-to-tendon healing instead of bone to tendon healing. Given this situation, specific preoperative planning and the use of a bioinductive scaffolding allows surgeons to enhance the overall construct, while promoting a beneficial healing environment. Although the addition of bioinductive implants has grown in popularity for upper extremity injuries, few cases describe its use in the lower extremity setting. Here, we present a case of midsubstance patellar tendon repair, as well as a medial and lateral retinacular repair using a structural biological implant with Type I collagen for augmentation to enhance our overall final construct.

Orthopedics/Bone and Joint Center
James CL, Wolterink TD, Fathima B, Burdick GB, Wager SG, Haan JW, Hegde YD, and **Muh S**. Effects of the COVID-19 Pandemic on Humeral Shaft Fracture Management and Its Outcomes. *Cureus* 2023; 15(8):e43433. PMID: 37706149. Full Text

Department of Orthopaedic Surgery, Henry Ford Health System, Detroit, USA.
Department of Orthopaedic Surgery, Wayne State University School of Medicine, Detroit, USA.
Department of Orthopaedic Surgery, Michigan State University College of Human Medicine, East Lansing, USA.
Department of Orthopaedic Surgery, Henry Ford Health System, West Bloomfield, USA.

Background and objective The coronavirus disease 2019 (COVID-19) pandemic necessitated a sudden and drastic shift in patient management throughout the healthcare system, to curb the spread of the disease and deal with resource limitations. Many surgical cases were canceled or delayed with only the most urgent and emergent cases taken up for treatment. It is unknown if and how these alterations affected patient outcomes. The purpose of this study was to compare time to fracture care and outcomes between patients treated for humeral shaft fractures prior to the COVID-19 pandemic and those treated during the pandemic. We hypothesized that the pandemic cohort would have a prolonged time to fracture care and worse outcomes than the pre-pandemic cohort. Materials and methods This was a retrospective

cohort study performed within a single healthcare system. All humeral shaft fractures treated from March to June 2019 (pre-pandemic cohort) and March to June 2020 (pandemic cohort) were identified using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes and ICD-10-CM codes as well as Current Procedural Terminology (CPT) codes. Data on demographics, fracture characteristics, treatment, and outcomes were collected via chart and radiograph review. Outcomes analyzed included time to being made weight-bearing as tolerated (WBAT), radiographic union, and final follow-up; range of motion (ROM) at radiographic union and final follow-up; and rate of complications. Results The pre-pandemic cohort (n=19) was significantly younger with a mean age of 29 years than the pandemic cohort (n=17) with a mean age of 49 years (p=0.010). There were no other significant differences in demographics, fracture characteristics, or treatment type between the groups. Time to fracture care was not significantly different in the pre-pandemic cohort (five days) versus the pandemic cohort (four days). Time to being made WBAT, radiographic union, and final follow-up were not significantly different between the pre-pandemic (86, 113, and 98 days) and the pandemic cohorts (77, 106, and 89.5 days). ROM measurements in abduction at radiographic union were significantly different between the cohorts: in the pre-pandemic cohort, 100% of patients reached greater than 160 degrees; in the pandemic cohort, only 16.7% of patients reached greater than 160 degrees (p=0.048). There was a non-significant decrease in the proportion of patients who achieved the maximal category of ROM measurements in forward elevation and extension at radiographic union and abduction, forward elevation, and extension at final follow-up, as well as a non-significant increase in visual analog scale (VAS) pain scores at final follow-up between cohorts. There were no significant differences in the rate of complications. Conclusions Despite limited resources, reduced operating room availability, and increased utilization of virtual visits due to the COVID-19 pandemic, patients with humeral shaft fractures may not have faced delays in fracture care or worse outcomes compared to the pre-pandemic period. The pandemic cohort may have experienced significantly decreased ROM compared to the pre-pandemic cohort, which may reflect the decreased availability of physical therapy services and overall decreased activity levels due to the quarantine orders. However, we could not identify any other significant differences in the type of treatment, pain, complications, or time to union.

Orthopedics/Bone and Joint Center

Meadows AM, **Skinner MM**, **Hazime AA**, **Day RG**, **Fore JA**, and **Day CS**. Racial, Ethnic, and Sex Diversity in Academic Medical Leadership. *JAMA Netw Open* 2023; 6(9):e2335529. PMID: 37747731. Full Text

Henry Ford Health, Detroit, Michigan.
Wayne State University School of Medicine, Detroit, Michigan.
Michigan State University College of Human Medicine, Grand Rapids.

IMPORTANCE: For the past 50 years, significant gaps have existed in gender and racial diversity across various medical specialties, despite the many benefits of a diverse physician workforce. One proposed approach to increasing diversity is top-down diversification, in which diverse leadership results in increased minority and female workforce representation. OBJECTIVE: To investigate the changes in academic medical leadership diversity from 2007 to 2019 and to assess the recent leadership diversity of various specialties compared with the averages across all specialties. DESIGN, SETTING, AND PARTICIPANTS: This was a cross-sectional analysis of physicians in varying academic roles in 2007, 2019, and 2020. Demographic data were collected via specialized reports from the Association of American Medical Colleges. Included were 4 primary care specialties (internal medicine, family medicine, pediatrics, obstetrics/gynecology [OB/GYN] and 4 surgical specialties (orthopedic surgery, neurologic surgery, otolaryngology [ENT], general surgery). Study participants were faculty, program directors, and chairpersons. Data were analyzed for the years 2007, 2019, and 2020. INTERVENTION: Self-reporting of demographic information to residency programs collected via the Graduate Medical Education Track Survey. MAIN OUTCOMES AND MEASURES: Proportions of each race/ethnicity and sex among cohorts of participants and comparisons between them. RESULTS: The total number of individuals investigated included 186 210 faculty from 2019 (79 441 female [42.7%]), 6417 program directors from 2020 (2392 female [37.3%]), 1016 chairpersons from 2007 (89 female [8.8%]), and 2424 chairpersons from 2019 (435 female [17.9%]). When comparing chairperson diversity from 2007 to 2019, only internal medicine and general surgery experienced significant increases in minority (aggregate category used throughout

the investigation to refer to anyone who self-identified as anything other than non-Hispanic White) representation (90% increase [11.7 percentage points, from 13.0% in 2007 to 24.7% in 2019]; P = .01 and 96% increase [13.0 percentage points, from 13.5% in 2007 to 26.5% in 2019]; P < .001), respectively; meanwhile, several specialties saw significant increases in female representation during this period (family medicine by 107.4%, P =.002; pediatrics by 83.1%, P =.006; OB/GYN by 53.2%, P =.045; orthopedic surgery by +4.1 percentage points, P =.04; general surgery by 226.9%, P =.005). In general, surgical specialties had lower leadership diversity than the average diversity of all residency programs, whereas primary care specialties had similar or increased diversity. CONCLUSIONS AND RELEVANCE: Study results suggest that some specialties have made significant contributions toward bridging diversity gaps whereas others continue to lag behind. Our recommendations to improve academic medical leadership diversity include programs and institutions (1) publishing efforts and outcomes of diversity representation, (2) incorporating a representative demographic for leadership selection committees, and (3) actively promoting the importance of diversity throughout the selection process.

Orthopedics/Bone and Joint Center

Saxena A, Danoff JR, Deckey DG, Barrett TJ, Bullock MW, Sonn KA, Freccero DM, **North T**, Fischer SJ, Adigweme OO, Robinson K, Jr., and Stronach BM. American Association of Hip and Knee Surgeons Patient Education and Public Relations Committee Update and Report. *J Arthroplasty* 2023; 38(9):1632-1635. PMID: 37573080. Full Text

Rothman Institute at Thomas Jefferson University, Philadelphia, Pennsylvania.
Department of Orthopaedic Surgery, Northwell Health, Great Neck, New York.
Department of Orthopaedic Surgery, Mayo Clinic Arizona, Phoenix, Arizona.
Department of Orthopaedic Surgery, Warren Alpert Medical School of Brown University, Providence, Rhode Island.
Department of Orthopaedic Surgery, Marshall University Joan C. Edwards School of Medicine, Huntington, West Virginia.
Department of Orthopaedic Surgery, Indiana University School of Medicine, Indianapolis, Indiana.
Boston Medical Center, Boston University School of Medicine.
Department of Orthopaedic Surgery, Henry Ford Health, Detroit, Michigan.
Overlook Hospital, Summit, New Jersey.
Orlando Orthopaedic Center, Orlando, Florida.
Communications Manager, American Association of Hip and Knee Surgeons, Rosemont, Illinois.
Department of Orthopaedic Surgery, University of Arkansas for Medical Sciences.

Orthopedics/Bone and Joint Center

Yadav RN, **Oravec DJ**, **Morrison CK**, **Bevins NB**, **Rao SD**, and **Yeni YN**. Digital wrist tomosynthesis (DWT)-based finite element analysis of ultra-distal radius differentiates patients with and without a history of osteoporotic fracture. *Bone* 2023; 177:116901. PMID: 37714502. Full Text

Bone and Joint Center, Henry Ford Health, Detroit, MI, USA.
Department of Radiology, Henry Ford Health, Detroit, MI, USA.
Division of Endocrinology, Diabetes and Bone, Mineral Disorders, and Bone, Mineral Research Laboratory, Henry Ford Health, Detroit, MI, USA.
Bone and Joint Center, Henry Ford Health, Detroit, MI, USA; Henry Ford Health + Michigan State University Health Sciences, Detroit, MI, USA. Electronic address: yeni@bjc.hfh.edu.

Despite effective therapies for those at risk of osteoporotic fracture, low adherence to screening guidelines and limited accuracy of bone mineral density (BMD) in predicting fracture risk preclude identification of those at risk. Because of high adherence to routine mammography, bone health screening at the time of mammography using a digital breast tomosynthesis (DBT) scanner has been suggested as a potential solution. BMD and bone microstructure can be measured from the wrist using a DBT scanner. However, the extent to which biomechanical variables can be derived from digital wrist tomosynthesis (DWT) has not been explored. Accordingly, we measured stiffness from a DWT based finite element (DWT-FE) model of the ultra-distal (UD) radius and ulna, and correlate these to reference microcomputed tomography image based FE (μCT-FE) from five cadaveric forearms. Further, this

method is implemented to determine in vivo reproducibility of FE derived stiffness of UD radius and demonstrate the in vivo utility of DWT-FE in bone quality assessment by comparing two groups of postmenopausal women with and without a history of an osteoporotic fracture (Fx; n = 15, NFx; n = 51). Stiffness obtained from DWT and μCT had a strong correlation (R(2) = 0.87, p < 0.001). In vivo repeatability error was <5 %. The NFx and Fx groups were not significantly different in DXA derived minimum T-scores (p > 0.3), but stiffness of the UD radius was lower for the Fx group (p < 0.007). Logistic regression models of fracture status with stiffness of the nondominant arm as the predictor were significant (p < 0.01). In conclusion this study demonstrates the feasibility of fracture risk assessment in mammography settings using DWT imaging and FE modeling in vivo. Using this approach, bone and breast screening can be performed in a single visit, with the potential to improve both the prevalence of bone health screening and the accuracy of fracture risk assessment.

Otolaryngology – Head and Neck Surgery
Law RH, **Larrabee KA**, Stefan AJ, Quan DL, **Peterson EL**, and **Singer MC**. Intraoperative Parathyroid Hormone Monitoring In Normohormonal Primary Hyperparathyroidism: How Low Do You Go? *Laryngoscope* 2023; Epub ahead of print. PMID: 37772923. Full Text

Department of Otolaryngology-Head and Neck Surgery, Henry Ford Health, Detroit, Michigan, USA.
Department of Otolaryngology-Head and Neck Surgery, Wayne State University School of Medicine, Detroit, Michigan, USA.
Department of Public Health Sciences, Henry Ford Hospital, Detroit, Michigan, USA.

OBJECTIVE: The primary goal of this study was to determine in patients with normohormonal primary hyperparathyroidism (NHHPT) what percent reduction in post-excision intraoperative parathyroid hormone (IOPTH) from baseline would yield a rate of cure comparable to that in patients with classical primary hyperparathyroidism (PHPT). METHODS: This is a retrospective cohort study of patients who underwent parathyroidectomy between July 2013 and February 2020. Demographic data, preoperative, intraoperative, and postoperative metrics were collected. Patients with NHHPT were compared to those with classical PHPT. Subgroup analyses were performed. RESULTS: Of the 496 patients included in the study, 66 (13.3%) were of the normohormonal variant based on preoperative intact parathyroid hormone (PTH) levels and 28 (5.6%) based on baseline IOPTH levels. The cure rates in the two normohormonal groups were not significantly different from their classical counterparts (98.4% and 100.0% vs. 97.1%, p = 1.000). The median percent decline in post-excision IOPTH from baseline that achieved cure in the normohormonal groups were 82.6% and 80.4% compared to their respective controls at 87.3%, p = 0.011 and p = 0.001. Although the rate of multiglandular disease was higher in one of the normohormonal variant groups, this difference was due to a higher rate of double adenomas, not four-gland hyperplasia. CONCLUSION: Patients with NHHPT undergoing parathyroidectomy can expect cure rates similar to that in patients with classical PHPT. The results of this study indicate that achieving an 80% drop or more in IOPTH levels predicts a high likelihood of cure. This is true irrespective of whether the patient is deemed normohormonal based on preoperative or intraoperative testing. LEVEL OF EVIDENCE: Level 3 Laryngoscope, 2023.

Otolaryngology – Head and Neck Surgery
Leonard KW, and Shah RR. Unilateral Pulsatile Tinnitus and Intractable Vertigo as a Manifestation of Natural Gas Toxicity. *OTO Open* 2023; 7(3):e76. PMID: 37736121. Full Text

Department of Otolaryngology-Head and Neck Surgery Henry Ford Health System Detroit Michigan USA.
Department of Surgery Michigan State University East Lansing Michigan USA.

Otolaryngology – Head and Neck Surgery
Tam S, **Neslund-Dudas C**, Barrett AM, Barrow LCJ, Fridman I, Kinlaw AC, Puviindran P, Royce TJ, Smith AB, Stein JN, Wood WA, and Lafata JE. The Perceived Usability of Virtual Visits Among Black Adults' Receiving Oncology Care: A Qualitative Analysis. *Oncologist* 2023; Epub ahead of print. PMID: 37756655. Full Text

Department of Public Health Sciences, Henry Ford Health, Detroit, MI, USA.

Department of Otolaryngology, Henry Ford Health, Detroit, MI, USA.
Department of Surgery, College of Human Medicine, Michigan State University, East Lansing, MI, USA.
Department of Epidemiology and Biostatistics, College of Human Medicine, Michigan State University, East Lansing, MI, USA.
University of North Carolina Eshelman School of Pharmacy, Chapel Hill, NC, USA.
Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA.
University of North Carolina Lineberger Comprehensive Cancer Center, Chapel Hill, NC, USA.
Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA.
Department of Radiation, Wake Forest School of Medicine, Winston-Salem, NC, USA.
Department of Urology, University of North Carolina School of Medicine, Chapel Hill, NC, USA.
Department of Medicine, University of North Carolina School of Medicine, Chapel Hill, NC, USA.

BACKGROUND: With the COVID-19 pandemic came rapid uptake in virtual oncology care. During this, sociodemographic inequities in access to virtual visits (VVs) have become apparent. To better understand these issues, we conducted a qualitative study to describe the perceived usability and acceptability of VVs among Black adults diagnosed with cancer. METHODS: Adults who self-identified as Black and had a diagnosis of prostate, multiple myeloma, or head and neck cancer were recruited from 2 academic medical centers, and their community affiliates to participate in a semi-structured interview, regardless of prior VV experience. A patient and family advisory board was formed to inform all components of the study. Interviews were conducted between September 2, 2021 and February 23, 2022. Transcripts were organized topically, and themes and subthemes were determined through iterative and interpretive immersion/crystallization cycles. RESULTS: Of the 49 adults interviewed, 29 (59%) had participated in at least one VV. Three overarching themes were derived: (1) VVs felt comfortable and convenient in the right contexts; (2) the technology required for VVs with video presented new challenges, which were often resolved by an audio-only telephone call; and (3) participants reported preferring in-person visits, citing concerns regarding gaps in nonverbal communication, trusting providers, and distractions during VV. CONCLUSION: While VVs were reported to be acceptable in specific circumstances, Black adults reported preferring in-person care, in part due to a perceived lack of interpersonal connectedness. Nonetheless, retaining reimbursement for audio-only options for VVs is essential to ensure equitable access for those with less technology savvy and/or limited device/internet capabilities.

Pathology and Laboratory Medicine

Herrgott GA, **Snyder JM**, **She R**, **Malta TM**, **Sabedot TS**, **Lee IY**, **Pawloski J**, Podolsky-Gondim GG, **Asmaro KP**, **Zhang J**, **Cannella CE**, **Nelson K**, **Thomas B**, **deCarvalho AC**, **Hasselbach LA**, **Tundo KM**, **Newaz R**, **Transou A**, **Morosini N**, **Francisco V**, **Poisson LM**, **Chitale D**, **Mukherjee A**, **Mosella MS**, **Robin AM**, **Walbert T**, **Rosenblum M**, **Mikkelsen T**, **Kalkanis S**, Tirapelli DPC, Weisenberger DJ, Carlotti CG, Jr., **Rock J**, **Castro AV**, and **Noushmehr H**. Detection of diagnostic and prognostic methylation-based signatures in liquid biopsy specimens from patients with meningiomas. *Nat Commun* 2023; 14(1):5669. PMID: 37704607. Full Text

Department of Neurosurgery, Omics Laboratory, Hermelin Brain Tumor Center, Henry Ford Health, Detroit, MI, USA.
Department of Public Health, Biostatistics, Henry Ford Health, Detroit, MI, USA.
Department of Neurosurgery, Ribeirao Preto Medical School, University of Sao Paulo, Ribeirao Preto, SP, Brazil.
Department of Pathology, Henry Ford Health, Detroit, MI, USA.
Department of Biochemistry and Molecular Medicine, Keck School of Medicine, University of Southern California, Los Angeles, CA, 90033, USA.
Department of Neurosurgery, Omics Laboratory, Hermelin Brain Tumor Center, Henry Ford Health, Detroit, MI, USA. acastro1@hfhs.org.
Department of Physiology, Michigan State University, E. Lansing, MI, USA. acastro1@hfhs.org.
Department of Neurosurgery, Omics Laboratory, Hermelin Brain Tumor Center, Henry Ford Health, Detroit, MI, USA. hnoushm1@hfhs.org.
Department of Physiology, Michigan State University, E. Lansing, MI, USA. hnoushm1@hfhs.org.

Recurrence of meningiomas is unpredictable by current invasive methods based on surgically removed specimens. Identification of patients likely to recur using noninvasive approaches could inform treatment strategy, whether intervention or monitoring. In this study, we analyze the DNA methylation levels in blood (serum and plasma) and tissue samples from 155 meningioma patients, compared to other central nervous system tumor and non-tumor entities. We discover DNA methylation markers unique to meningiomas and use artificial intelligence to create accurate and universal models for identifying and predicting meningioma recurrence, using either blood or tissue samples. Here we show that liquid biopsy is a potential noninvasive and reliable tool for diagnosing and predicting outcomes in meningioma patients. This approach can improve personalized management strategies for these patients.

Pathology and Laboratory Medicine

Nathanson SD, Dieterich LC, Zhang XH, **Chitale DA**, Pusztai L, Reynaud E, Wu YH, and Ríos-Hoyo A. Associations amongst genes, molecules, cells, and organs in breast cancer metastasis. *Clin Exp Metastasis* 2023; Epub ahead of print. PMID: 37688650. Full Text

Department of Surgery, Henry Ford Health, 2799 W. Grand Blvd, Detroit, MI, 48202, USA. dnathan1@hfhs.org.
Cancer Center, Henry Ford Health, Detroit, MI, USA. dnathan1@hfhs.org.
European Center for Angioscience (ECAS), Medical Faculty Mannheim of Heidelberg University, Mannheim, Germany.
Lester and Sue Smith Breast Center, Dan L. Duncan Cancer Center, Department of Molecular and Cellular Biology, Baylor College of Medicine, Houston, TX, USA.
Department of Pathology, Henry Ford Health, Detroit, MI, USA.
Yale Cancer Center, Yale School of Medicine, New Haven, Connecticut, USA.

This paper is a cross fertilization of ideas about the importance of molecular aspects of breast cancer metastasis by basic scientists, a pathologist, and clinical oncologists at the Henry Ford Health symposium. We address four major topics: (i) the complex roles of lymphatic endothelial cells and the molecules that stimulate them to enhance lymph node and systemic metastasis and influence the anti-tumor immunity that might inhibit metastasis; (ii) the interaction of molecules and cells when breast cancer spreads to bone, and how bone metastases may themselves spread to internal viscera; (iii) how molecular expression and morphologic subtypes of breast cancer assist clinicians in determining which patients to treat with more or less aggressive therapies; (iv) how the outcomes of patients with oligometastases in breast cancer are different from those with multiple metastases and how that could justify the aggressive treatment of these patients with the hope of cure.

Pathology and Laboratory Medicine

Poisson LM, **Kaur N**, **Felicella MM**, and **Singh J**. System-based integrated metabolomics and microRNA analysis identifies potential molecular alterations in human X-linked cerebral Adrenoleukodystrophy brain. *Hum Mol Genet* 2023; Epub ahead of print. PMID: 37656183. Request Article

Department of Public Health Science, Henry Ford Hospital, Detroit 48202, MI, USA.
Department of Neurology, Henry Ford Hospital, Detroit, 48202, MI, USA.
Department of Pathology, Henry Ford Hospital, Detroit, 48202, MI, USA.

X-linked adrenoleukodystrophy is a severe demyelinating neurodegenerative disease mainly affecting males. The severe cerebral adrenoleukodystrophy (cALD) phenotype has a poor prognosis and underlying mechanism of onset and progression of neuropathology remains poorly understood. In this study we aim to integrate metabolomic and microRNA (miRNA) datasets to identify variances associated with cALD. Postmortem brain tissue samples from five healthy controls (CTL) and five cALD patients were utilized in this study. White matter from ALD patients was obtained from normal-appearing areas, away from lesions (NLA) and from the periphery of lesions- plaque shadow (PLS). Metabolomics was performed by gas chromatography coupled with time-of-flight mass spectrometry and miRNA expression analysis was performed by next generation sequencing (RNAseq). Principal component analysis revealed

that among the three sample groups (CTL, NLA and PLS) there were 19 miRNA, including several novel miRNA, of which 17 were increased with disease severity and 2 were decreased. Untargeted metabolomics revealed 13 metabolites with disease severity-related patterns with 7 increased and 6 decreased with disease severity. Ingenuity pathway analysis of differentially altered metabolites and miRNA comparing CTL with NLA and NLA with PLS, identified several hubs of metabolite and signaling molecules and their upstream regulation by miRNA. The transomic approach to map the crosstalk between miRNA and metabolomics suggests involvement of specific molecular and metabolic pathways in cALD and offers opportunity to understand the complex underlying mechanism of disease severity in cALD.

Pharmacy
Fronrath MJ, Hencken L, **Martz CR**, **Kelly B**, and **Smith ZR**. Fluid resuscitation and relation to respiratory support escalation in patients with and without pulmonary hypertension with sepsis. *Pharmacotherapy* 2023; Epub ahead of print. PMID: 37728179. Full Text

Henry Ford Hospital, Detroit, Michigan, USA.
Barnes-Jewish Hospital, St. Louis, Missouri, USA.

STUDY OBJECTIVE: To compare guideline-based fluid resuscitation and need for respiratory support escalation in septic patients with pulmonary hypertension (PH) to those without PH. DESIGN: Single-center, retrospective cohort study. SETTING: Tertiary care academic medical center in Detroit, Michigan. PATIENTS: Adult patients with or without PH hospitalized and diagnosed with sepsis from November 1, 2013 through December 31, 2019. Patients with sepsis were assigned to one of two groups based on a previous PH diagnosis or no PH diagnosis. INTERVENTION: None. MEASUREMENTS AND MAIN RESULTS: The primary outcome was incidence of respiratory support escalation within 72 h from sepsis time zero. Respiratory support escalation included high-flow nasal cannula, bilevel positive airway pressure, or intubation. One-hundred and four patients were included with 52 patients in each study group. Patients with PH were more likely to require escalation of respiratory support compared to non-PH patients (32.7% vs. 11.5%; $p = 0.009$). Fewer patients with PH received 30 mL/kg of crystalloid within 6 h of time zero compared with non-PH patients (3.8% vs. 42.3%; $p < 0.001$). Vasopressor initiation was more common in patients with PH compared with the non-PH group (40.4% vs. 19.2%; $p = 0.018$). PH diagnosis was the only independent predictor of respiratory support escalation. CONCLUSIONS: During initial sepsis management when compared with patients without PH, patients with PH had increased instances of respiratory support escalation within 72 h of sepsis time zero despite lower fluid resuscitation volumes.

Pharmacy
Griebe K, **Jiang C**, and **MacDonald NC**. Assessing the pharmacy workforce's preparedness for a workplace violence event. *Am J Health Syst Pharm* 2023; Epub ahead of print. PMID: 37698265. Full Text

Department of Pharmacy Services, Henry Ford Hospital, Detroit, MI, USA.

DISCLAIMER: In an effort to expedite the publication of articles, AJHP is posting manuscripts online as soon as possible after acceptance. Accepted manuscripts have been peer-reviewed and copyedited, but are posted online before technical formatting and author proofing. These manuscripts are not the final version of record and will be replaced with the final article (formatted per AJHP style and proofed by the authors) at a later time. PURPOSE: The purpose of this article is to describe the planning, implementation, and findings of a person with a weapon exercise for an inpatient pharmacy department. SUMMARY: There has been an increased focus on workplace violence in healthcare within the last few years. The health-system pharmacy workforce should take an active role in planning for workplace violence events by completing a risk assessment analysis and performing tabletop and functional exercises. This study provides an example of how health-system pharmacists collaborated with an emergency management team, security, and communications to carry out a person with a weapon exercise in an inpatient hospital pharmacy. Areas for improvement were identified for pharmacy, communications, and security during education sessions and the tabletop and functional exercises,

demonstrating the importance of a multidisciplinary approach when planning for a person with a weapon event. As a result of this exercise, there was increased awareness of the "run, hide, fight" tactic, an increase in workplace violence education and staff awareness, and an enhancement of security measures, including technology improvements. CONCLUSION: This workplace violence exercise provides an example of how the pharmacy workforce can engage in emergency preparedness planning and risk mitigation for a workplace violence event. Other health systems can use the action plan, findings, and improvements to raise awareness and train about workplace violence events and support the safety of the pharmacy workforce.

Pharmacy

Kunz Coyne AJ, Orzol C, **Veve MP**, and Rybak MJ. Weighing the Odds: Novel β-Lactam/β-Lactamase Inhibitor Use in Hospital-Acquired and Ventilator-Associated Pseudomonas aeruginosa Pneumonia for Patients Who Are Morbidly Obese. *Open Forum Infect Dis* 2023; 10(9):ofad454. PMID: 37720698. Full Text

Department of Pharmacy Practice, Eugene Applebaum College of Pharmacy and Health Sciences, Wayne State University, Detroit, Michigan, USA.
Anti-Infective Research Laboratory, Eugene Applebaum College of Pharmacy and Health Sciences, Wayne State University, Detroit, Michigan, USA.
Department of Pharmacy, Henry Ford Hospital, Detroit, Michigan, USA.
Department of Pharmacy Services, Detroit Receiving Hospital, Detroit Medical Center, Detroit, Michigan, USA.
Division of Infectious Diseases, School of Medicine, Wayne State University, Detroit, Michigan, USA.

BACKGROUND: Pseudomonas aeruginosa is a leading cause of hospital-acquired and ventilator-associated bacterial pneumonia (HABP/VABP). Novel β-lactam/β-lactamase inhibitor (BL/BLI) combinations are often used for these infections; however, limited data exist to guide the dosing of BL/BLI in patients who are morbidly obese. Thus, we sought to evaluate the clinical and safety endpoints of patients who are morbidly obese (body mass index ≥35 kg/m(2)) and non-morbidly obese (<35 kg/m(2)) and receiving BL/BLI for P aeruginosa HABP/VABP. METHODS: This retrospective study was based on a cohort of patients hospitalized at 2 urban academic medical centers in Detroit, Michigan, from August 2014 through February 2021 with P aeruginosa HABP/VABP who were receiving BL/BLI (ceftazidime/avibactam, ceftolozane/tazobactam, or meropenem/vaborbactam) for ≥72 continuous hours. The primary endpoint was presumed treatment failure, defined as the presence of all-cause in-hospital mortality or the continuation of infectious symptoms. Analyses were adjusted for possible confounding with inverse probability of treatment weighting. Multivariable regression was used to identify predictors of treatment failure. RESULTS: In total, 285 patients with HABP (61.4%) and/or VABP (56.1%) were enrolled (morbidly obese, n = 95; non-morbidly obese, n = 190). The median Acute Physiology and Chronic Health Evaluation II score was 23 (IQR, 13-26), and 60% of patients were admitted to the intensive care unit at index culture collection. Patients who were morbidly obese demonstrated significantly greater odds of presumed treatment failure vs those who were non-morbidly obese (58.9% vs 37.9%, respectively; adjusted odds ratio, 1.675 [95% CI, 1.465-1.979]). In multivariable analysis, morbid obesity (1.06; 95% CI, 1.02-1.79), prolonged time to BL/BLI initiation (1.47; 95% CI, 1.28-2.66), renal dose-adjusted BL/BLI in the first 48 hours of therapy (1.12; 95% CI, 1.09-1.75), and continuous renal replacement therapy during BL/BLI therapy (1.35; 95% CI, 1.06-1.68) were independently associated with increased odds of presumed treatment failure. CONCLUSIONS: Among hospitalized patients receiving BL/BLI for P aeruginosa HABP/VABP, those who were morbidly obese had significantly greater odds of presumed treatment failure when compared with those who were non-morbidly obese.

Pharmacy

Mulugeta SG, **MacDonald NC**, **El-Khoury CJ**, **Davis SL**, and **Kenney RM**. Impact of a Standardized, Pharmacist-Initiated "Test-Claim" Workflow for Anticipating Barriers to Accessing Discharge Antimicrobials. *J Pharm Technol* 2023; 39(5):218-223. PMID: 37745731. Full Text

Pharmacy Division, Henry Ford Health, Detroit, MI, USA.
Wayne State University, Detroit, MI, USA.

Background: Inability to access and afford discharge oral antimicrobials may delay discharges or result in therapeutic failure. "Test-claims" have the potential to identify such barriers. Objective: This study evaluated discharge antimicrobial access and patient outcomes after implementation of a standardized, inpatient pharmacist-initiated antimicrobial discharge medication cost inquiry (aDMCI) process. Methods: This was an Institutional Review Board (IRB)-approved, pilot retrospective cohort study that included adults admitted for ≥72 hours from November 1, 2018, to February 28, 2019, and discharged on oral antimicrobials. Patients with a cost inquiry (aDMCI group) were compared with those without (standard-of-care, SOC, group). Primary endpoint was discharge delay. Secondary endpoints included percentage of patients discharged on suboptimal antimicrobials and medication errors from aDMCI. Results: 84 patients were included: 43 in SOC and 41 in aDMCI. Seventy-five antimicrobial cost inquiries were evaluated among 41 patients. There were no discharge delays or medication errors associated with the standardized "test-claim" (aDMCI) workflow. Patients in the SOC group had a greater Charlson Comorbidity Index (4 [2-6] vs 2 [1-4], P =0.004), were more likely to be immunosuppressed (24, 56% vs 12, 29%; P =0.014), and had longer hospitalization (8 [5-15] vs 6 [5-9] days, P =0.026). Primary access barriers were prior-authorization (8, 11%) and associated with linezolid and moxifloxacin cost inquiries. Most aDMCIs results were available in <24 hours (66, 88%). Conclusions: The aDMCI process is safe and offers an actionable transition of care tool that can identify barriers to accessing discharge medications while insulating patients from surprise out-of-pocket cost.

Plastic Surgery

Wonski BT, Patel B, **Tepper DG**, **Siddiqui A**, **Kabbani LS**, and Lam MT. Adipose-derived stem cells significantly increases collagen level and fiber maturity in patient-specific biological engineered blood vessels. *PLoS One* 2023; 18(9):e0291766. PMID: 37738272. Full Text

Department of Biomedical Engineering, Wayne State University, Detroit, Michigan, United States of America.
Department of Plastic and Reconstructive Surgery, Henry Ford Health System, Detroit, Michigan, United States of America.
Department of Vascular Surgery, Henry Ford Health System, Detroit, Michigan, United States of America.

Tissue engineering has driven significant research in the strive to create a supply of tissues for patient treatment. Cell integration into engineered tissues maximizes functional capabilities, however, issues of rejection remain. Autologous cell sources able to solve this issue are difficult to identify for tissue engineering purposes. Here, we present the efficacy of patient-sourced cells derived from adipose (adipose-derived stem cells, ASCs) and skin tissue (dermal fibroblasts, PtFibs) to build a combined engineered tunica media and adventitia graft, respectively. Patient cells were integrated into our lab's vascular tissue engineering technique of forming vascular rings that are stacked into a tubular structure to create the vascular graft. For the media layer, ASCs were successfully differentiated into the smooth muscle phenotype using angiotensin II followed by culture in smooth muscle growth factors, evidenced by significantly increased expression of αSMA and myosin light chain kinase. Engineered media vessels composed of differentiated ASCs (ASC-SMCs) exhibited an elastic modulus (45.2 ± 18.9 kPa) between that of vessels of undifferentiated ASCs (71.8 ± 35.3 kPa) and control human aortic smooth muscle cells (HASMCs; 18.7 ± 5.49 kPa) ($p<0.5$). Tensile strength of vessels composed of ASCs (41.3 ± 15.7 kPa) and ASC-SMCs (37.3 ± 17.0 kPa) were higher compared to vessels of HASMCs (28.4 ± 11.2 kPa). ASC-based tissues exhibited a significant increase in collagen content and fiber maturity- both factors contribute to tissue strength and stability. Furthermore, vessels gained stability and a more-uniform single-tubular shape with longer-term 1-month culture. This work demonstrates efficacy of ASCs and PtFibs to create patient-specific vessels.

Public Health Sciences

Ayyash M, **Goyert G**, **Pitts D**, **Khangura R**, **Garcia R**, **Jacobsen G**, and **Shaman M**. Provider adherence to aspirin prophylaxis prescription guidelines for preeclampsia. *Pregnancy Hypertens* 2023; 34:1-4. PMID: 37696232. Full Text

Department of Obstetrics and Gynecology, Henry Ford Health, Detroit, MI, United States. Electronic address: mariam.ayyash@gmail.com.
Division of Maternal and Fetal Medicine, Department of Obstetrics and Gynecology, Henry Ford Health, Detroit, MI, United States.
Department of Public Health Sciences, Henry Ford Health, Detroit, MI, United States.

OBJECTIVE: To evaluate provider adherence to aspirin prophylaxis prescription guidelines for patients at risk. STUDY DESIGN: A retrospective chart review was performed at Henry Ford Health (HFH) between October 2015 and December 2020. In October 2015, low-dose aspirin was recommended for women who met high risk criteria for preeclampsia at HFH; in February 2019, aspirin recommendation expanded to include women who met either moderate or high-risk criteria. A total of 46,016 pregnancies occurred between Oct 2015 and Dec 2020 of which 15,167 (33.0%) met high and moderate risk criteria. RESULTS: From the population at risk, 1,255 (8.3%) had a history of preeclampsia, 2,534 (16.7%) had a history of chronic hypertension, 1,418 (9.3%) had a history of diabetes, 7,470 (49.3%) were nulliparous, 4,038 (26.6%) were 35 years of age or older, 6,395 (42.2%) had a body mass index greater than 30 kg/m2, and 8,174 (54.5%) were African Americans. Only 630 out of 3,584 (17.6%) of women meeting the high-risk criteria for preeclampsia between Oct 2015 and Jan 2019 received low-dose aspirin and only 891 out of 5,874 (15.2%) of women meeting the high or moderate risk criteria for preeclampsia between Feb 2019 and Dec 2020 received low-dose aspirin prophylaxis. CONCLUSION: Adherence to aspirin prophylaxis guidelines was low. Most urban healthcare systems serve diverse, high-risk populations with multiple comorbidities rendering many women at risk for preeclampsia. Educational efforts to improve provider knowledge regarding this important preventative measure are indicated. Recommendation for implementing universal aspirin in such high-risk populations should also be considered.

Public Health Sciences

Bossick AS, Williams EC, Painter I, and Katon JG. Association of Reproductive Autonomy and Rates of State-Level Racialized Disparities in Preterm Birth and Low Birthweight. *Health Equity* 2023; 7(1):497-505. PMID: 37731780. Full Text

Department of Health Systems and Population Health, School of Public Health, University of Washington, Seattle, Washington, USA.
U.S. Department of Veterans Affairs Health Services Research and Development Center of Innovation for Veteran-Centered and Value-Driven Care, Veterans Affairs Puget Sound Healthcare System, Seattle, Washington, USA.
Department of Public Health Sciences, Henry Ford Health, Detroit, Michigan, USA.
Washington State Department of Health, Olympia, Washington, USA.
Health Services Research and Development (HSR&D) Center for the Study of Healthcare Innovation, Implementation, and Policy, VA Greater Los Angeles Healthcare System, Los Angeles, California, USA.

INTRODUCTION: Reproductive policies' impact on disparities in neonatal outcomes is understudied. Thus, we aimed to assess whether an index of reproductive autonomy is associated with black-white disparities in preterm birth (PTB) and low birthweight (LBW). METHODS: We used publicly available state-level PTB and LBW data for all live-births among persons aged 15-44 from January 1, 2016, to December 31, 2018. The independent measure was an index of state laws characterizing each state's reproductive autonomy, ranging from 5 (most restrictive) to 43 (most enabling), used continuously and as quartiles. Linear regression was performed to evaluate the association between both the index score (continuous, primary analysis; quartiles, secondary analysis) and state-level aggregated black-white disparity rates in PTB and LBW per 100 live births. RESULTS: Among 10,297,437 black (n=1,829,051 [17.8%]) and white (n=8,468,386 [82.2%]) births, rates of PTB and LBW were 6.46 and 8.24 per 100, respectively. Regression models found that every 1-U increase in the index was associated with a -0.06 (confidence interval [CI]: -0.10 to -0.01) and -0.05 (CI: -0.08, to -0.01) per 100 lower black-white disparity in PTB and LBW rates ($p<0.05$, $p<0.01$), respectively. The most enabling quartiles were associated with -1.21 (CI: -2.38 to -0.05) and -1.62 (CI: -2.89 to -0.35) per 100 lower rates of the black-white disparity in LBW, compared with the most restrictive quartile (both $p<0.05$). CONCLUSION: Greater reproductive autonomy is associated with lower rates of state-level disparities in PTB and LBW. More research is

needed to better understand the importance of state laws in shaping racialized disparities, reproductive autonomy, and birth outcomes.

Public Health Sciences
Carey C, Silvestrini M, Callegari LS, Katon JG, **Bossick AS**, Doll KM, Christy A, Washington DL, and Owens S. "I Wasn't Presented With Options": Perspectives of Black Veterans Receiving Care for Uterine Fibroids in the Veterans Health Administration. *Womens Health Issues* 2023; Epub ahead of print. PMID: 37689493. Full Text

Health Services Research and Development (HSR&D) Center of Innovation for Veteran-Centered and Value-Driven Care, U.S. Department of Veterans Affairs, VA Puget Sound Healthcare System, Seattle, Washington.
Health Services Research and Development (HSR&D) Center of Innovation for Veteran-Centered and Value-Driven Care, U.S. Department of Veterans Affairs, VA Puget Sound Healthcare System, Seattle, Washington; Department of Health Systems and Population Health, University of Washington, Seattle, Washington; Department of Obstetrics and Gynecology, University of Washington, Seattle, Washington. Electronic address: Lisa.Callegari@va.gov.
Department of Public Health Sciences, Henry Ford Health, Detroit, Michigan; Department of Obstetrics, Gynecology, and Reproductive Biology, College of Human Medicine, Michigan State University, East Lansing, Michigan.
Department of Health Systems and Population Health, University of Washington, Seattle, Washington; Department of Obstetrics and Gynecology, University of Washington, Seattle, Washington.
Women's Health Services, Veterans Administration, U.S. Department of Veterans Affairs, Washington, District of Columbia.
VA HSR&D Center for the Study of Healthcare Innovation, Implementation and Policy, VA Greater Los Angeles Healthcare System, Los Angeles, California; Division of General Internal Medicine and Health Services Research, Department of Medicine, University of California, Los Angeles, Los Angeles, California.
Department of Health Systems and Population Health, University of Washington, Seattle, Washington.

INTRODUCTION: Black women with uterine fibroids experience greater symptom severity and worse treatment outcomes compared with their White counterparts. Black veterans who use the Veteran's Health Administration (VA) health care experience similar disparities. This study investigated the experiences of Black veterans receiving care for uterine fibroids at VA. METHODS: We identified Black veterans aged 18 to 54 years with newly diagnosed symptomatic uterine fibroids between the fiscal years 2010 to 2012 using VA medical record data, and we recruited participants for interviews in 2021. We used purposive sampling by the last recorded fibroid treatment in the data (categorized as hysterectomy, other uterine-sparing treatments, and medication only/no treatment) to ensure diversity of treatment experiences. In-depth semistructured interviews were conducted to gather rich narratives of veterans' uterine fibroid care experiences. Transcribed interviews were analyzed using content analysis. RESULTS: Twenty Black veterans completed interviews. Key themes that emerged included the amplified impact of severe fibroid symptoms in male-dominated military culture, the presence of multilevel barriers, from individual to health care system factors, that delayed access to high-quality treatment; experiences of interpersonal racism and provider bias, and the impact of fertility loss related to fibroids on mental health and intimate relationships. Veterans with positive experiences stressed the importance of finding a trustworthy provider and self-advocacy. CONCLUSIONS: System-level interventions, such as race-conscious and person-centered care training, are needed to improve care experiences and outcomes of Black veterans with fibroids.

Public Health Sciences
Fasano GA, Bayard S, **Chen Y**, Marti J, Simmons R, Swistel A, **Bensenhaver J**, Davis M, and Newman L. ASO Visual Abstract: Survival Outcomes in Women with Unilateral Triple Negative Breast Cancer Correlated with Contralateral Prophylactic Mastectomy. *Ann Surg Oncol* 2023; Epub ahead of print. PMID: 37713121. Full Text

Department of Surgery, New York Presbyterian - Weill Cornell Medicine, New York, NY, USA.

Department of Public Health Sciences, Henry Ford Health System, Detroit, MI, USA.
Department of Surgery, Henry Ford Health System, Detroit, MI, USA.
Department of Surgery, New York Presbyterian - Weill Cornell Medicine, New York, NY, USA. Lan4002@med.cornell.edu.
Department of Breast Surgery, New York Presbyterian - Weill Cornell Medicine, New York, NY, USA. Lan4002@med.cornell.edu.

Public Health Sciences

Gill JK, **Bissonette A**, **Cook AA**, **Jaehne AK**, **Day J**, **Renaud S**, **Jacobsen G**, Nelson K, Kozikowski L, **Jayaprakash N**, **Gardner-Gray J**, **Swiderek J**, Oldmixon CF, Ringwood NJ, Sherwin RL, Williams MD, **Gupta AH**, **Johnson NJ**, Hyzy RC, Park PK, and **Rivers EP**. Research Staff COVID-19 Pandemic Survey-Results from the Prevention and Early Treatment of Acute Lung Injury (PETAL) Network. *COVID* 2023; 3(10):1528-1543. PMID: Not assigned. Full Text

1. Department of Emergency Medicine, Henry Ford Hospital, Detroit, MI 48202, USA
2. Department of Pulmonary and Critical Care, Henry Ford Hospital, Detroit, MI 48202, USA
3. Public Health Science, Henry Ford Hospital, Detroit, MI 48202, USA
4. Department of Pulmonary Critical Care, University of Michigan, Ann Arbor, MI 48109, USA
5. Bay State Medical Center, Springfield, MA 01199, USA
6. The PETAL Network Clinical Coordinating Center, Boston, MA 02114, USA
7. Department of Emergency Medicine, Detroit Medical Center, Detroit, MA 48201, USA
8. Department of Pulmonary and Critical Care, Indiana University School of Medicine, Indianapolis, IN 46202, USA
9. Department of Surgery & Critical Care, Henry Ford Hospital, Detroit, MI 48202, USA
10. Department of Emergency Medicine & Pulmonary Critical Care, University of Washington, Seattle, WA 98195, USA
11. Department of Surgery, University of Michigan, Ann Arbor, MI,48109, USA

Objectives: There is a lack of knowledge about the challenges of researchers who continued in-person research during the early phases of the COVID-19 pandemic. Design: Electronic survey assessing work-related exposure to COVID-19, logistical challenges, and procedural changes during the first year of the COVID-19 pandemic on clinical research. Setting: National Heart, Lung, and Blood Institute-sponsored Prevention and Early Treatment of Acute Lung Injury Clinical Trial Network Centers. Subjects: Research staff at research Network Sites. Measurements and Main Results: The 37-question survey was completed by 277 individuals from 24 states between 29 September 2020, and 12 December 2020, yielding a response rate of 37.7%. Most respondents (91.5%) indicated that non-COVID-19 research was affected by COVID-19 research studies. In response to the COVID-19 pandemic, 20% of respondents were reassigned to different roles at their institution. Many survey takers were exposed to COVID-19 (56%), with more than 50% of researchers requiring a COVID-19 test and 8% testing positive. The fear of infection was 2.7-times higher compared to pre-COVID-19 times. Shortages of personal protective equipment were encountered by 34% of respondents, primarily due to lack of access to N95 masks, followed by gowns and protective eyewear. Personal protective equipment reallocation from research to clinical use was reported by 31% of respondents. Most of the respondents (88.5%), despite these logistical challenges, indicated their willingness to enroll COVID-19 patients. Conclusions: During the first year of the COVID-19 pandemic, members of the research network were engaged in COVID-19 research despite logistical challenges, limited access to personal protective equipment, and fear of exposure. The research network's survey experience can inform ongoing policy discussions to create research enterprises that can dexterously refocus research to address the knowledge gaps associated with novel public health emergencies while mitigating the effect of pandemics on existing research projects and research personnel.

Public Health Sciences

Gui H, Tang WHW, Francke S, **Li J**, **She R**, Bazeley P, Pereira NL, Adams K, **Luzum JA**, Connolly TM, Hernandez AF, McNaughton CD, **Williams LK**, and **Lanfear DE**. Common Variants on FGD5 Increase Hazard of Mortality or Rehospitalization in Patients With Heart Failure From the ASCEND-HF Trial. *Circ Heart Fail* 2023; 16(9):e010438. PMID: 37725680. Full Text

Center for Individualized and Genomics Medicine Research (H.G., J.A.L., L.K.W., D.E.L.), Henry Ford Hospital, Detroit, MI.
Department of Cardiovascular Medicine, Cleveland Clinic, OH (W.H.W.T., P.B.).
Cary, NC (S.F.).
Department of Public Health Science (J.L., R.S.), Henry Ford Hospital, Detroit, MI.
Department of Cardiovascular Medicine, Mayo Clinic, Rochester, MN (N.L.P.).
Department of Medicine, University of North Carolina, Chapel Hill (K.A.).
Department of Clinical Pharmacy, University of Michigan, Ann Arbor (J.A.L.).
Lansdale, PA, previously Janssen Research & Development LLC, Spring House, PA (T.M.C.).
Duke Clinical Research Institute, Durham, NC (A.F.H.).
Department of Emergency Medicine, Vanderbilt University Medical Center, Nashville, TN (C.D.M.).
Heart and Vascular Institute (D.E.L.), Henry Ford Hospital, Detroit, MI.

BACKGROUND: Heart failure remains a global health burden, and patients hospitalized are particularly at risk, but genetic associates for subsequent death or rehospitalization are still lacking. METHODS: The genetic substudy of the ASCEND-HF trial (Acute Study of Clinical Effectiveness of Nesiritide in Decompensated Heart Failure) was used to perform genome-wide association study and transethnic meta-analysis. The overall trial included the patients of self-reported European ancestry (n=2173) and African ancestry (n=507). The end point was death or heart failure rehospitalization within 180 days. Cox models adjusted for 11 a priori predictors of rehospitalization and 5 genetic principal components were used to test the association between single-nucleotide polymorphisms and outcome. Summary statistics from the 2 populations were combined via meta-analysis with the significance threshold considered P<5×10(-)(8). RESULTS: Common variants (rs2342882 and rs35850039 in complete linkage disequilibrium) located in FGD5 were significantly associated with the primary outcome in both ancestry groups (European Americans: hazard ratio [HR], 1.38; P=2.42×10(-6); African ancestry: HR, 1.51; P=4.43×10(-)(3); HR in meta-analysis, 1.41; P=4.25×10(-8)). FGD5 encodes a regulator of VEGF (vascular endothelial growth factor)-mediated angiogenesis, and in silico investigation revealed several previous genome-wide association study hits in this gene, among which rs748431 was associated with our outcome (HR, 1.20; meta P<0.01). Sensitivity analysis proved FGD5 common variants survival association did not appear to operate via coronary artery disease or nesiritide treatment (P>0.05); and the signal was still significant when changing the censoring time from 180 to 30 days (HR, 1.39; P=1.59×10(-5)). CONCLUSIONS: In this multiethnic genome-wide association study of ASCEND-HF, single-nucleotide polymorphisms in FGD5 were associated with increased risk of death or rehospitalization. Additional investigation is required to examine biological mechanisms and whether FGD5 could be a therapeutic target. REGISTRATION: URL: https://www. CLINICALTRIALS: gov; Unique identifier: NCT00475852.

Public Health Sciences

Herrgott GA, **Snyder JM**, **She R**, **Malta TM**, **Sabedot TS**, **Lee IY**, **Pawloski J**, Podolsky-Gondim GG, **Asmaro KP**, **Zhang J**, **Cannella CE**, **Nelson K**, **Thomas B**, **deCarvalho AC**, **Hasselbach LA**, **Tundo KM**, **Newaz R**, **Transou A**, **Morosini N**, **Francisco V**, **Poisson LM**, **Chitale D**, **Mukherjee A**, **Mosella MS**, **Robin AM**, **Walbert T**, **Rosenblum M**, **Mikkelsen T**, **Kalkanis S**, Tirapelli DPC, Weisenberger DJ, Carlotti CG, Jr., **Rock J**, **Castro AV**, and **Noushmehr H**. Detection of diagnostic and prognostic methylation-based signatures in liquid biopsy specimens from patients with meningiomas. *Nat Commun* 2023; 14(1):5669. PMID: 37704607. Full Text

Department of Neurosurgery, Omics Laboratory, Hermelin Brain Tumor Center, Henry Ford Health, Detroit, MI, USA.
Department of Public Health, Biostatistics, Henry Ford Health, Detroit, MI, USA.
Department of Neurosurgery, Ribeirao Preto Medical School, University of Sao Paulo, Ribeirao Preto, SP, Brazil.
Department of Pathology, Henry Ford Health, Detroit, MI, USA.
Department of Biochemistry and Molecular Medicine, Keck School of Medicine, University of Southern California, Los Angeles, CA, 90033, USA.

Department of Neurosurgery, Omics Laboratory, Hermelin Brain Tumor Center, Henry Ford Health, Detroit, MI, USA. acastro1@hfhs.org.
Department of Physiology, Michigan State University, E. Lansing, MI, USA. acastro1@hfhs.org.
Department of Neurosurgery, Omics Laboratory, Hermelin Brain Tumor Center, Henry Ford Health, Detroit, MI, USA. hnoushm1@hfhs.org.
Department of Physiology, Michigan State University, E. Lansing, MI, USA. hnoushm1@hfhs.org.

Recurrence of meningiomas is unpredictable by current invasive methods based on surgically removed specimens. Identification of patients likely to recur using noninvasive approaches could inform treatment strategy, whether intervention or monitoring. In this study, we analyze the DNA methylation levels in blood (serum and plasma) and tissue samples from 155 meningioma patients, compared to other central nervous system tumor and non-tumor entities. We discover DNA methylation markers unique to meningiomas and use artificial intelligence to create accurate and universal models for identifying and predicting meningioma recurrence, using either blood or tissue samples. Here we show that liquid biopsy is a potential noninvasive and reliable tool for diagnosing and predicting outcomes in meningioma patients. This approach can improve personalized management strategies for these patients.

Public Health Sciences
Ishak R, **Todter E**, **Sitarik AR**, **Zoratti E**, **Kim H**, **Joseph C**, **Johnson CC**, Ownby DR, and **Eapen A**. Early childhood atopic phenotypes and the development of allergic respiratory disease. *Pediatr Allergy Immunol* 2023; 34(9):e14029. PMID: 37747744. Full Text

Division of Allergy and Clinical Immunology, Henry Ford Hospital, Detroit, Michigan, USA.
Department of Public Health Sciences, Henry Ford Hospital, Detroit, Michigan, USA.
Augusta University Medical Center, Augusta, Georgia, USA.

Public Health Sciences
Keet C, Sicherer SH, Bunyavanich S, Visness C, Fulkerson PC, Togias A, Davidson W, Perry S, Hamrah S, Calatroni A, Robinson K, Dunaway L, Davis CM, Anvari S, Leong-Kee SM, Hershey GK, DeFranco E, Devonshire A, **Kim H**, **Joseph C**, **Davidson B**, Strong NK, Tsuang AJ, Groetch M, Wang J, Dantzer J, Mudd K, Aina A, Shreffler W, Yuan Q, Simmons V, Leung DYM, Hui-Beckman J, Ramos JA, Chinthrajah S, Winn V, Sindher T, Jones SM, Manning NA, Scurlock AM, Kim E, Stuebe A, Gern JE, Singh AM, Krupp J, and Wood RA. The SunBEAm birth cohort: Protocol design. *J Allergy Clin Immunol Glob* 2023; 2(3). PMID: 37771674. Full Text

Department of Pediatrics, University of North Carolina, Chapel Hill.
Icahn School of Medicine at Mount Sinai, New York.
Rho Inc, Federal Research Operations, Durham.
Division of Allergy, Immunology and Transplantation, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda.
Department of Pediatrics, Baylor College of Medicine, Houston.
Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston.
Cincinnati Children's Hospital Medical Center, Cincinnati.
University of Cincinnati, Cincinnati.
Henry Ford Health, Detroit.
Department of Pediatrics, Division of Pediatric Allergy, Immunology and Rheumatology, Johns Hopkins University School of Medicine, Baltimore.
Department of Obstetrics and Gynecology, Johns Hopkins University School of Medicine, Baltimore.
Massachusetts General Hospital, Boston.
Massachusetts General Hospital, Newton-Wellesley Hospital, Newton.
National Jewish Health, Denver.
Saint Joseph Hospital of Obstetrics and Gynecology, Denver.
Sean N. Parker Center for Allergy and Asthma Research, Stanford University, Palo Alto.
Division Maternal Fetal Medicine and Obstetrics, Stanford University, Palo Alto.
University of Arkansas for Medical Sciences and Arkansas Children's Hospital, Little Rock.
University of Arkansas for Medical Sciences, Little Rock.

Department of Obstetrics and Gynecology, University of North Carolina, Chapel Hill.
Department of Pediatrics, University of Wisconsin, Madison.
Maternal and Fetal Medicine, Obstetrics and Gynecology, SSM Health, Madison.

BACKGROUND: Food allergy (FA) and atopic dermatitis (AD) are common conditions that often present in the first year of life. Identification of underlying mechanisms and environmental determinants of FA and AD is essential to develop and implement effective prevention and treatment strategies. Objectives: We sought to describe the design of the Systems Biology of Early Atopy (SunBEAm) birth cohort. METHODS: Funded by the National Institute of Allergy and Infectious Diseases (NIAID) and administered through the Consortium for Food Allergy Research (CoFAR), SunBEAm is a US population-based, multicenter birth cohort that enrolls pregnant mothers, fathers, and their newborns and follows them to 3 years. Questionnaire and biosampling strategies were developed to apply a systems biology approach to identify environmental, immunologic, and multiomic determinants of AD, FA, and other allergic outcomes. RESULTS: Enrollment is currently underway. On the basis of an estimated FA prevalence of 6%, the enrollment goal is 2500 infants. AD is defined on the basis of questionnaire and assessment, and FA is defined by an algorithm combining history and testing. Although any FA will be recorded, we focus on the diagnosis of egg, milk, and peanut at 5 months, adding wheat, soy, cashew, hazelnut, walnut, codfish, shrimp, and sesame starting at 12 months. Sampling includes blood, hair, stool, dust, water, tape strips, skin swabs, nasal secretions, nasal swabs, saliva, urine, functional aspects of the skin, and maternal breast milk and vaginal swabs. CONCLUSIONS: The SunBEAm birth cohort will provide a rich repository of data and specimens to interrogate mechanisms and determinants of early allergic outcomes, with an emphasis on FA, AD, and systems biology.

Public Health Sciences

Law RH, **Larrabee KA**, Stefan AJ, Quan DL, **Peterson EL**, and **Singer MC**. Intraoperative Parathyroid Hormone Monitoring In Normohormonal Primary Hyperparathyroidism: How Low Do You Go? *Laryngoscope* 2023; Epub ahead of print. PMID: 37772923. Full Text

Department of Otolaryngology-Head and Neck Surgery, Henry Ford Health, Detroit, Michigan, USA.
Department of Otolaryngology-Head and Neck Surgery, Wayne State University School of Medicine, Detroit, Michigan, USA.
Department of Public Health Sciences, Henry Ford Hospital, Detroit, Michigan, USA.

OBJECTIVE: The primary goal of this study was to determine in patients with normohormonal primary hyperparathyroidism (NHHPT) what percent reduction in post-excision intraoperative parathyroid hormone (IOPTH) from baseline would yield a rate of cure comparable to that in patients with classical primary hyperparathyroidism (PHPT). METHODS: This is a retrospective cohort study of patients who underwent parathyroidectomy between July 2013 and February 2020. Demographic data, preoperative, intraoperative, and postoperative metrics were collected. Patients with NHHPT were compared to those with classical PHPT. Subgroup analyses were performed. RESULTS: Of the 496 patients included in the study, 66 (13.3%) were of the normohormonal variant based on preoperative intact parathyroid hormone (PTH) levels and 28 (5.6%) based on baseline IOPTH levels. The cure rates in the two normohormonal groups were not significantly different from their classical counterparts (98.4% and 100.0% vs. 97.1%, $p = 1.000$). The median percent decline in post-excision IOPTH from baseline that achieved cure in the normohormonal groups were 82.6% and 80.4% compared to their respective controls at 87.3%, $p = 0.011$ and $p = 0.001$. Although the rate of multiglandular disease was higher in one of the normohormonal variant groups, this difference was due to a higher rate of double adenomas, not four-gland hyperplasia. CONCLUSION: Patients with NHHPT undergoing parathyroidectomy can expect cure rates similar to that in patients with classical PHPT. The results of this study indicate that achieving an 80% drop or more in IOPTH levels predicts a high likelihood of cure. This is true irrespective of whether the patient is deemed normohormonal based on preoperative or intraoperative testing. LEVEL OF EVIDENCE: Level 3 Laryngoscope, 2023.

Public Health Sciences

Nyati S, **Stricker H**, **Barton KN**, **Li P**, **Elshaikh M**, **Ali H**, **Brown SL**, **Hwang C**, **Peabody J**, **Freytag SO**, **Movsas B**, and **Siddiqui F**. A phase I clinical trial of oncolytic adenovirus mediated suicide and interleukin-12 gene therapy in patients with recurrent localized prostate adenocarcinoma. *PLoS One* 2023; 18(9):e0291315. PMID: 37713401. Full Text

Department of Radiation Oncology, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Radiology, College of Osteopathic Medicine, Michigan State University, East Lansing, Michigan, United States of America.
Vattikuti Urology Institute, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Public Health Sciences, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Internal Medicine, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
College of Human Medicine, Michigan State University, East Lansing, Michigan, United States of America.

In a phase I dose escalation and safety study (NCT02555397), a replication-competent oncolytic adenovirus expressing yCD, TK and hIL-12 (Ad5-yCD/mutTKSR39rep-hIL-12) was administered in 15 subjects with localized recurrent prostate cancer (T1c-T2) at increasing doses (1 × 1010, to 1 × 1012 viral particles) followed by 7-day treatment of 5-fluorocytosine (5-FC) and valganciclovir (vGCV). The primary endpoint was toxicity through day 30 while the secondary and exploratory endpoints were quantitation of IL-12, IFNγ, CXCL10 and peripheral blood mononuclear cells (PBMC). The study maximum tolerated dose (MTD) was not reached indicating 1012 viral particles was safe. Total 115 adverse events were observed, most of which (92%) were grade 1/2 that did not require any treatment. Adenoviral DNA was detected only in two patients. Increase in IL-12, IFNγ, and CXCL10 was observed in 57%, 93%, and 79% patients, respectively. Serum cytokines demonstrated viral dose dependency, especially apparent in the highest-dose cohorts. PBMC analysis revealed immune system activation after gene therapy in cohort 5. The PSA doubling time (PSADT) pre and post treatment has a median of 1.55 years vs 1.18 years. This trial confirmed that replication-competent Ad5-IL-12 adenovirus (Ad5-yCD/mutTKSR39rep-hIL-12) was well tolerated when administered locally to prostate tumors.

Public Health Sciences

Poisson LM, **Kaur N**, **Felicella MM**, and **Singh J**. System-based integrated metabolomics and microRNA analysis identifies potential molecular alterations in human X-linked cerebral Adrenoleukodystrophy brain. *Hum Mol Genet* 2023; Epub ahead of print. PMID: 37656183. Request Article

Department of Public Health Science, Henry Ford Hospital, Detroit 48202, MI, USA.
Department of Neurology, Henry Ford Hospital, Detroit, 48202, MI, USA.
Department of Pathology, Henry Ford Hospital, Detroit, 48202, MI, USA.

X-linked adrenoleukodystrophy is a severe demyelinating neurodegenerative disease mainly affecting males. The severe cerebral adrenoleukodystrophy (cALD) phenotype has a poor prognosis and underlying mechanism of onset and progression of neuropathology remains poorly understood. In this study we aim to integrate metabolomic and microRNA (miRNA) datasets to identify variances associated with cALD. Postmortem brain tissue samples from five healthy controls (CTL) and five cALD patients were utilized in this study. White matter from ALD patients was obtained from normal-appearing areas, away from lesions (NLA) and from the periphery of lesions- plaque shadow (PLS). Metabolomics was performed by gas chromatography coupled with time-of-flight mass spectrometry and miRNA expression analysis was performed by next generation sequencing (RNAseq). Principal component analysis revealed that among the three sample groups (CTL, NLA and PLS) there were 19 miRNA, including several novel miRNA, of which 17 were increased with disease severity and 2 were decreased. Untargeted metabolomics revealed 13 metabolites with disease severity-related patterns with 7 increased and 6

decreased with disease severity. Ingenuity pathway analysis of differentially altered metabolites and miRNA comparing CTL with NLA and NLA with PLS, identified several hubs of metabolite and signaling molecules and their upstream regulation by miRNA. The transomic approach to map the crosstalk between miRNA and metabolomics suggests involvement of specific molecular and metabolic pathways in cALD and offers opportunity to understand the complex underlying mechanism of disease severity in cALD.

Public Health Sciences

Tam S, **Neslund-Dudas C**, Barrett AM, Barrow LCJ, Fridman I, Kinlaw AC, Puviindran P, Royce TJ, Smith AB, Stein JN, Wood WA, and Lafata JE. The Perceived Usability of Virtual Visits Among Black Adults' Receiving Oncology Care: A Qualitative Analysis. *Oncologist* 2023; Epub ahead of print. PMID: 37756655. Full Text

Department of Public Health Sciences, Henry Ford Health, Detroit, MI, USA.
Department of Otolaryngology, Henry Ford Health, Detroit, MI, USA.
Department of Surgery, College of Human Medicine, Michigan State University, East Lansing, MI, USA.
Department of Epidemiology and Biostatistics, College of Human Medicine, Michigan State University, East Lansing, MI, USA.
University of North Carolina Eshelman School of Pharmacy, Chapel Hill, NC, USA.
Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA.
University of North Carolina Lineberger Comprehensive Cancer Center, Chapel Hill, NC, USA.
Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA.
Department of Radiation, Wake Forest School of Medicine, Winston-Salem, NC, USA.
Department of Urology, University of North Carolina School of Medicine, Chapel Hill, NC, USA.
Department of Medicine, University of North Carolina School of Medicine, Chapel Hill, NC, USA.

BACKGROUND: With the COVID-19 pandemic came rapid uptake in virtual oncology care. During this, sociodemographic inequities in access to virtual visits (VVs) have become apparent. To better understand these issues, we conducted a qualitative study to describe the perceived usability and acceptability of VVs among Black adults diagnosed with cancer. METHODS: Adults who self-identified as Black and had a diagnosis of prostate, multiple myeloma, or head and neck cancer were recruited from 2 academic medical centers, and their community affiliates to participate in a semi-structured interview, regardless of prior VV experience. A patient and family advisory board was formed to inform all components of the study. Interviews were conducted between September 2, 2021 and February 23, 2022. Transcripts were organized topically, and themes and subthemes were determined through iterative and interpretive immersion/crystallization cycles. RESULTS: Of the 49 adults interviewed, 29 (59%) had participated in at least one VV. Three overarching themes were derived: (1) VVs felt comfortable and convenient in the right contexts; (2) the technology required for VVs with video presented new challenges, which were often resolved by an audio-only telephone call; and (3) participants reported preferring in-person visits, citing concerns regarding gaps in nonverbal communication, trusting providers, and distractions during VV. CONCLUSION: While VVs were reported to be acceptable in specific circumstances, Black adults reported preferring in-person care, in part due to a perceived lack of interpersonal connectedness. Nonetheless, retaining reimbursement for audio-only options for VVs is essential to ensure equitable access for those with less technology savvy and/or limited device/internet capabilities.

Pulmonary and Critical Care Medicine

Baugh A, and **McIntosh J**. Truth & Consequences: Choosing the Best Interpretative Framework for Spirometry. *Am J Respir Crit Care Med* 2023; Epub ahead of print. PMID: 37699143. Full Text

UCSF, Division of Pulmonary and Critical Care Medicine, Department of Medicine and CVRI, San Francisco, California, United States; Aaron.Baugh@ucsf.edu.
Henry Ford Hospital, 24016, Medicine, Detroit, Michigan, United States.

Pulmonary and Critical Care Medicine

Cherabuddi MR, **Shadid AM**, **Obeidat L**, **Jesse M**, and **Bradley P**. Measuring disparities in virtual healthcare and outcomes in chronic obstructive pulmonary disease patients during the COVID-19 pandemic. *J Telemed Telecare* 2023; Epub ahead of print. PMID: 37753613. Full Text

Department of Internal Medicine, Henry Ford Hospital, Detroit, MI, USA. RINGGOLD: 24016
Henry Ford Transplant Institute, Henry Ford Health, Detroit, MI, USA. RINGGOLD: 2971
Department of Pulmonary and Critical Care Medicine, Henry Ford Hospital, Detroit, MI, USA. RINGGOLD: 24016

INTRODUCTION: The use of virtual healthcare increased with the COVID-19 pandemic, even among chronic obstructive pulmonary disease (COPD) patients. We measured disparities in virtual compared to traditional healthcare and outcomes in COPD patients during the pandemic. METHODS: This study retrospectively identified adult patients with virtual or in-person primary care encounters at a large, Midwestern hospital system between March 1, 2020, and June 30, 2020. Data regarding age, sex, race, smoking, area deprivation index (ADI), COPD diagnosis, visit type (office, telephone, video, E-visit, virtual, or hybrid of office and virtual), and time to hospital admission in the following 12 months were collected. Analysis was performed using chi-square, analysis of variance, Kruskal-Wallis rank sum, and Cox proportional modeling. RESULTS: This study identified 86,715 patients. Of those, 4702 had COPD and were more likely to be 65 years or older, White, have higher ADI, use telephone or hybrid visits compared to the rest of the study population and majority had smoking history. Office, telephone, and hybrid visits were used frequently, consistently seen across sex, race, ADI, and smoking categories. Increasing age was associated with increased use of office and telephone visits, and decreased use of video visits. Higher ADI was associated with telephone visits, and lower ADI was associated with video visits. There were no significant differences in overall, COPD, or COVID-19 hospital admission rates across visit types. DISCUSSION: Complex disparities in utilizing traditional healthcare are also reflected in virtual healthcare in COPD patients, and do not significantly affect hospital admissions.

Pulmonary and Critical Care Medicine

Fronrath MJ, Hencken L, **Martz CR**, **Kelly B**, and **Smith ZR**. Fluid resuscitation and relation to respiratory support escalation in patients with and without pulmonary hypertension with sepsis. *Pharmacotherapy* 2023; Epub ahead of print. PMID: 37728179. Full Text

Henry Ford Hospital, Detroit, Michigan, USA.
Barnes-Jewish Hospital, St. Louis, Missouri, USA.

STUDY OBJECTIVE: To compare guideline-based fluid resuscitation and need for respiratory support escalation in septic patients with pulmonary hypertension (PH) to those without PH. DESIGN: Single-center, retrospective cohort study. SETTING: Tertiary care academic medical center in Detroit, Michigan. PATIENTS: Adult patients with or without PH hospitalized and diagnosed with sepsis from November 1, 2013 through December 31, 2019. Patients with sepsis were assigned to one of two groups based on a previous PH diagnosis or no PH diagnosis. INTERVENTION: None. MEASUREMENTS AND MAIN RESULTS: The primary outcome was incidence of respiratory support escalation within 72 h from sepsis time zero. Respiratory support escalation included high-flow nasal cannula, bilevel positive airway pressure, or intubation. One-hundred and four patients were included with 52 patients in each study group. Patients with PH were more likely to require escalation of respiratory support compared to non-PH patients (32.7% vs. 11.5%; $p = 0.009$). Fewer patients with PH received 30 mL/kg of crystalloid within 6 h of time zero compared with non-PH patients (3.8% vs. 42.3%; $p < 0.001$). Vasopressor initiation was more common in patients with PH compared with the non-PH group (40.4% vs. 19.2%; $p = 0.018$). PH diagnosis was the only independent predictor of respiratory support escalation. CONCLUSIONS: During initial sepsis management when compared with patients without PH, patients with PH had increased instances of respiratory support escalation within 72 h of sepsis time zero despite lower fluid resuscitation volumes.

Pulmonary and Critical Care Medicine

Gill JK, **Bissonette A**, **Cook AA**, **Jaehne AK**, **Day J**, **Renaud S**, **Jacobsen G**, Nelson K, Kozikowski L, **Jayaprakash N**, **Gardner-Gray J**, **Swiderek J**, Oldmixon CF, Ringwood NJ, Sherwin RL, Williams MD, **Gupta AH**, **Johnson NJ**, Hyzy RC, Park PK, and **Rivers EP**. Research Staff COVID-19 Pandemic Survey-Results from the Prevention and Early Treatment of Acute Lung Injury (PETAL) Network. *COVID* 2023; 3(10):1528-1543. PMID: Not assigned. Full Text

1. Department of Emergency Medicine, Henry Ford Hospital, Detroit, MI 48202, USA
2. Department of Pulmonary and Critical Care, Henry Ford Hospital, Detroit, MI 48202, USA
3. Public Health Science, Henry Ford Hospital, Detroit, MI 48202, USA
4. Department of Pulmonary Critical Care, University of Michigan, Ann Arbor, MI 48109, USA
5. Bay State Medical Center, Springfield, MA 01199, USA
6. The PETAL Network Clinical Coordinating Center, Boston, MA 02114, USA
7. Department of Emergency Medicine, Detroit Medical Center, Detroit, MA 48201, USA
8. Department of Pulmonary and Critical Care, Indiana University School of Medicine, Indianapolis, IN 46202, USA
9. Department of Surgery & Critical Care, Henry Ford Hospital, Detroit, MI 48202, USA
10. Department of Emergency Medicine & Pulmonary Critical Care, University of Washington, Seattle, WA 98195, USA
11. Department of Surgery, University of Michigan, Ann Arbor, MI,48109, USA

Objectives: There is a lack of knowledge about the challenges of researchers who continued in-person research during the early phases of the COVID-19 pandemic. Design: Electronic survey assessing work-related exposure to COVID-19, logistical challenges, and procedural changes during the first year of the COVID-19 pandemic on clinical research. Setting: National Heart, Lung, and Blood Institute-sponsored Prevention and Early Treatment of Acute Lung Injury Clinical Trial Network Centers. Subjects: Research staff at research Network Sites. Measurements and Main Results: The 37-question survey was completed by 277 individuals from 24 states between 29 September 2020, and 12 December 2020, yielding a response rate of 37.7%. Most respondents (91.5%) indicated that non-COVID-19 research was affected by COVID-19 research studies. In response to the COVID-19 pandemic, 20% of respondents were reassigned to different roles at their institution. Many survey takers were exposed to COVID-19 (56%), with more than 50% of researchers requiring a COVID-19 test and 8% testing positive. The fear of infection was 2.7-times higher compared to pre-COVID-19 times. Shortages of personal protective equipment were encountered by 34% of respondents, primarily due to lack of access to N95 masks, followed by gowns and protective eyewear. Personal protective equipment reallocation from research to clinical use was reported by 31% of respondents. Most of the respondents (88.5%), despite these logistical challenges, indicated their willingness to enroll COVID-19 patients. Conclusions: During the first year of the COVID-19 pandemic, members of the research network were engaged in COVID-19 research despite logistical challenges, limited access to personal protective equipment, and fear of exposure. The research network's survey experience can inform ongoing policy discussions to create research enterprises that can dexterously refocus research to address the knowledge gaps associated with novel public health emergencies while mitigating the effect of pandemics on existing research projects and research personnel.

Radiation Oncology

Ghanem AI, **Bhatnagar A**, **Elshaikh M**, **Hijaz M**, and **Elshaikh MA**. Recurrence Risk Stratification for Women With FIGO Stage I Uterine Endometrioid Carcinoma Who Underwent Surgical Lymph Node Evaluation. *Am J Clin Oncol* 2023; Epub ahead of print. PMID: 37679878. Full Text

Department of Radiation Oncology, Henry Ford Cancer Institute.
Clinical Oncology Department, University of Alexandria Faculty of Medicine, Alexandria, Egypt.
Department of Women's Health Services, Division of Gynecologic Oncology, Henry Ford Cancer Institute, Detroit, MI.

OBJECTIVE: The aim of this study was to estimate the recurrence risk based on the number of prognostic factors for patients with stage I uterine endometrioid carcinoma (EC) who underwent surgical

lymph node evaluation (SLNE) and were managed with observation. METHODS: We queried our database for women with FIGO-2009 stage I EC who underwent surgical staging including SLNE. Multivariate analysis with stepwise model selection was used to determine independent risk factors for 5-year recurrence-free survival (RFS). Study groups based on risk factors were compared for RFS, disease-specific survival, and overall survival. RESULTS: A total of 706 patients were identified: median age was 60 years (range, 30 to 93 y) and median follow-up was 120 months. Median number of examined lymph nodes was 8 (range, 1 to 66). 91% were stage IA, 75% had grade 1 and lymphovascular space invasion was detected in 6%. Independent predictors of 5-year RFS included age 60 years and above (P=0.038), grade 2 (P=0.003), and grade 3 (P<0.001) versus grade 1. Five-year RFS for group 0 (age less than 60 y and grade 1) was 98% versus 92% for group 1 (either: age 60 y and older or grade 2/3) versus 84% for group 2 (both: age 60 y and above and grade 2/3), respectively (P<0.001). Five-year disease-specific survival was 100% versus 98% versus 95%, (P=0.012) and 5-year overall survival was 98% versus 90% versus 81%, for groups 0, 1, and 2, respectively (P<0.001). CONCLUSIONS: In patients with stage I EC who received SLNE and no adjuvant therapy, only age 60 years and above and high tumor grade were independent predictors of recurrence and can be used to quantify individualized recurrence risk, whereas lymphovascular space invasion was not an independent prognostic factor in this cohort.

Radiation Oncology

Li C, **Bagher-Ebadian H**, Sultan R, **Elshaikh M**, **Movsas B**, Zhu D, and **Chetty IJ**. A new architecture combining convolutional and transformer-based networks for automatic 3D multi-organ segmentation on CT images. *Med Phys* 2023; Epub ahead of print. PMID: 37738468. Full Text

College of Engineering - Dept. of Computer Science, Wayne State University, Detroit, Michigan, USA.
Department of Radiation Oncology, Henry Ford Cancer Institute, Detroit, Michigan, USA.
Department of Radiology, Michigan State University, East Lansing, Michigan, USA.
Department of Osteopathic Medicine, Michigan State University, East Lansing, Michigan, USA.
Department of Physics, Oakland University, Rochester, Michigan, USA.
Department of Radiation Oncology, Cedars Sinai Medical Center, Los Angeles, CA, USA.

PURPOSE: Deep learning-based networks have become increasingly popular in the field of medical image segmentation. The purpose of this research was to develop and optimize a new architecture for automatic segmentation of the prostate gland and normal organs in the pelvic, thoracic, and upper gastro-intestinal (GI) regions. METHODS: We developed an architecture which combines a shifted-window (Swin) transformer with a convolutional U-Net. The network includes a parallel encoder, a cross-fusion block, and a CNN-based decoder to extract local and global information and merge related features on the same scale. A skip connection is applied between the cross-fusion block and decoder to integrate low-level semantic features. Attention gates (AGs) are integrated within the CNN to suppress features in image background regions. Our network is termed "SwinAttUNet." We optimized the architecture for automatic image segmentation. Training datasets consisted of planning-CT datasets from 300 prostate cancer patients from an institutional database and 100 CT datasets from a publicly available dataset (CT-ORG). Images were linearly interpolated and resampled to a spatial resolution of (1.0 × 1.0× 1.5) mm(3) . A volume patch (192 × 192 × 96) was used for training and inference, and the dataset was split into training (75%), validation (10%), and test (15%) cohorts. Data augmentation transforms were applied consisting of random flip, rotation, and intensity scaling. The loss function comprised Dice and cross-entropy equally weighted and summed. We evaluated Dice coefficients (DSC), 95th percentile Hausdorff Distances (HD95), and Average Surface Distances (ASD) between results of our network and ground truth data. RESULTS: SwinAttUNet, DSC values were 86.54 ± 1.21, 94.15 ± 1.17, and 87.15 ± 1.68% and HD95 values were 5.06 ± 1.42, 3.16 ± 0.93, and 5.54 ± 1.63 mm for the prostate, bladder, and rectum, respectively. Respective ASD values were 1.45 ± 0.57, 0.82 ± 0.12, and 1.42 ± 0.38 mm. For the lung, liver, kidneys and pelvic bones, respective DSC values were: 97.90 ± 0.80, 96.16 ± 0.76, 93.74 ± 2.25, and 89.31 ± 3.87%. Respective HD95 values were: 5.13 ± 4.11, 2.73 ± 1.19, 2.29 ± 1.47, and 5.31 ± 1.25 mm. Respective ASD values were: 1.88 ± 1.45, 1.78 ± 1.21, 0.71 ± 0.43, and 1.21 ± 1.11 mm. Our network outperformed several existing deep learning approaches using only attention-based convolutional or Transformer-based feature strategies, as detailed in the results section. CONCLUSIONS: We have demonstrated that our new architecture combining Transformer- and convolution-based features

is able to better learn the local and global context for automatic segmentation of multi-organ, CT-based anatomy.

Radiation Oncology

Nyati S, **Stricker H**, **Barton KN**, **Li P**, **Elshaikh M**, **Ali H**, **Brown SL**, **Hwang C**, **Peabody J**, **Freytag SO**, **Movsas B**, and **Siddiqui F**. A phase I clinical trial of oncolytic adenovirus mediated suicide and interleukin-12 gene therapy in patients with recurrent localized prostate adenocarcinoma. *PLoS One* 2023; 18(9):e0291315. PMID: 37713401. Full Text

Department of Radiation Oncology, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Radiology, College of Osteopathic Medicine, Michigan State University, East Lansing, Michigan, United States of America.
Vattikuti Urology Institute, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Public Health Sciences, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Internal Medicine, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
College of Human Medicine, Michigan State University, East Lansing, Michigan, United States of America.

In a phase I dose escalation and safety study (NCT02555397), a replication-competent oncolytic adenovirus expressing yCD, TK and hIL-12 (Ad5-yCD/mutTKSR39rep-hIL-12) was administered in 15 subjects with localized recurrent prostate cancer (T1c-T2) at increasing doses (1 × 1010, to 1 × 1012 viral particles) followed by 7-day treatment of 5-fluorocytosine (5-FC) and valganciclovir (vGCV). The primary endpoint was toxicity through day 30 while the secondary and exploratory endpoints were quantitation of IL-12, IFNγ, CXCL10 and peripheral blood mononuclear cells (PBMC). The study maximum tolerated dose (MTD) was not reached indicating 1012 viral particles was safe. Total 115 adverse events were observed, most of which (92%) were grade 1/2 that did not require any treatment. Adenoviral DNA was detected only in two patients. Increase in IL-12, IFNγ, and CXCL10 was observed in 57%, 93%, and 79% patients, respectively. Serum cytokines demonstrated viral dose dependency, especially apparent in the highest-dose cohorts. PBMC analysis revealed immune system activation after gene therapy in cohort 5. The PSA doubling time (PSADT) pre and post treatment has a median of 1.55 years vs 1.18 years. This trial confirmed that replication-competent Ad5-IL-12 adenovirus (Ad5-yCD/mutTKSR39rep-hIL-12) was well tolerated when administered locally to prostate tumors.

Sleep Medicine

Cheng P, Fischer D, Johnson DA, and McHill AW. Editorial: Influence of sleep and recurrent circadian disruption on cardiometabolic health, wellbeing, and safety: from shiftwork to Monday mornings. *Front Endocrinol (Lausanne)* 2023; 14:1268940. PMID: 37674614. Full Text

Thomas Roth Sleep Disorders & Research Center, Henry Ford Health + Michigan State University Health Sciences, Detroit, MI, United States.
Department of Sleep and Human Factors Research, Institute for Aerospace Medicine, German Aerospace Center, Cologne, Germany.
Department of Epidemiology, Rollins School of Public Health, Emory University, Atlanta, GA, United States.
Sleep, Chronobiology, and Health Laboratory, School of Nursing, Oregon Health & Science University, Portland, OR, United States.
Oregon Institute of Occupational Health Sciences, Oregon Health & Science University, Portland, OR, United States.

Sleep Medicine

Kalmbach DA, **Reffi AN**, Ong JC, **Cheng P**, Walch O, **Pitts DS**, **Seymour GM**, **Hirata M**, **Roth A**, **Roth T**, and **Drake CL**. Preliminary evidence of psychological improvements and increased maternal-fetal attachment associated with a mindfulness sleep programme: secondary analysis of uncontrolled data in 11 pregnant women with insomnia disorder. *J Sleep Res* 2023; e14040. Epub ahead of print. PMID: 37691407. Full Text

Sleep Disorders & Research Center, Henry Ford Health, Detroit, Michigan, USA.
Perinatal Sleep Health Institute, Henry Ford Health, Detroit, Michigan, USA.
Department of Obstetrics, Gynecology, and Reproductive Biology, Michigan State University College of Human Medicine, East Lansing, Michigan, USA.
Department of Neurology, Center for Circadian and Sleep Medicine, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA.
Behavioral Sleep Medicine, Nox Health, Suwanee, Georgia, USA.
Department of Neurology, University of Michigan, Ann Arbor, Michigan, USA.
Arascope Inc, Falls Church, Virginia, USA.
Maternal Fetal Medicine, Henry Ford Health, Detroit, Michigan, USA.
Thriving Minds, Livonia, Michigan, USA.

Treating insomnia during pregnancy improves sleep and depressed mood. However, given well-established links between poor sleep and a broad spectrum of adverse maternal outcomes, the benefits of insomnia care may reach beyond sleep and depression. The present study evaluated the preliminary efficacy of 'Perinatal Understanding of Mindful Awareness for Sleep' (PUMAS)-a mindfulness sleep programme tailored to pregnancy that combines behavioural sleep strategies and meditation-for enhancing everyday mindfulness and maternal-fetal attachment, as well as for alleviating anxiety, repetitive thinking, and sleep-related daytime impairment. We conducted a secondary analysis of a single-arm proof-of-concept trial of 11 pregnant women with fifth edition of the Diagnostic and Statistical Manual of Mental Disorders diagnosed insomnia disorder who completed PUMAS (six sessions), which was delivered in an individual format via telemedicine video. Pre- and post-treatment outcomes included the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R), Maternal-Fetal Attachment Scale (MFAS), Generalised Anxiety Disorder seven-item survey (GAD-7), Perseverative Thinking Questionnaire (PTQ), Daytime Insomnia Symptoms Response Scale (DISRS), and the Patient-Reported Outcomes Measurement Information System Sleep-Related Impairment Scale (PROMIS-SRI). Symptom changes were evaluated with paired-samples t tests. Results showed PUMAS patients reported large increases in CAMS-R (Cohen's d(z) = 1.81) and medium-large increases in MFAS scores (Cohen's d(z) = 0.73). Moreover, PUMAS patients reported large reductions in scores on the GAD-7 (Cohen's d(z) = 1.09), PTQ (Cohen's d(z) = 1.26), DISRS (Cohen's d(z) = 1.38), and PROMIS-SRI (Cohen's d(z) = 1.53). Preliminary evidence suggests that a mindfulness-based perinatal sleep programme may benefit several domains of maternal wellbeing beyond sleep and depression. PUMAS substantially enhanced patient ratings of everyday mindfulness and maternal-fetal attachment, while reporting alleviations in anxiety, perseverative thinking, insomnia-focused rumination, and sleep-related daytime impairment.

Sleep Medicine

Yazdanirad S, Khoshakhlagh AH, Al Sulaie S, **Drake CL**, and Wickwire EM. The effects of occupational noise on sleep: A systematic review. *Sleep Med Rev* 2023; 72:101846. PMID: 37683554. Full Text

Social Determinants of Health Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran; School of Health, Shahrekord University of Medical Sciences, Shahrekord, Iran. Electronic address: saeedyazdanirad@gmail.com.
Department of Occupational Health, School of Health, Kashan University of Medical Sciences, Kashan, Iran. Electronic address: ah.khoshakhlagh@gmail.com.
Department of Industrial Engineering, College of Engineering in Al-Qunfudah, Umm Al-Qura University, Makkah, 21955, Saudi Arabia. Electronic address: smsulaie@uqu.edu.sa.
Henry Ford Health System, Sleep Disorders and Research Center, Detroit, MI, USA. Electronic address: CDRAKE1@hfhs.org.

Psychiatry and Medicine, Section Head, Sleep Medicine, University of Maryland, School of Medicine, USA. Electronic address: ewickwire@som.umaryland.edu.

Noise exposure in the workplace is one of the most common occupational hazards, which can affect sleep in the human. The effects of occupational noise can be different than that of environmental or social noise. This study aimed to conduct a systematic review on the effects of occupational noise on various characteristics of sleep. In this study, three electronic bibliographic databases (Scopus, PubMed, and Web of Science) were systematically searched up to 14 December 2022. The search algorithm included two sets of keywords and possible combinations. The first group was keywords related to occupational noise, and the second group was keywords related to sleep. A total of 2082 articles were identified in the initial search, and 2034 articles were excluded based on exclusion criteria or lacking inclusion criteria. Finally, 48 articles met the inclusion criteria and were selected for final review. Among 13 articles identified as high quality, all studies (100%) showed that noise had a significant effect on sleep among workers in various occupations. Among 17 articles with moderate quality, thirteen studies (76.47%) indicated that noise had a significant effect on sleep among workers in different occupations. Among 18 low-quality articles, fifteen studies (83.33%) showed that noise had a significant effect on sleep. 41 out of 48 studies (85.42%) found that occupational noise can negatively impact sleep among employees in various occupations. There are at least four potential pathways for this effect, including the physiological effect of daytime noise exposure, the psychological effect of daytime noise exposure, the effect of nighttime noise exposure, and the effect of hearing problems due to noise.

Surgery

Aldridge TA, Mathias KK, Bergquist JR, Fong YY, **Li AY**, and Visser BC. Utilization of parenteral nutrition in major gastrointestinal surgery: An opportunity for quality improvement. *Clin Nutr ESPEN* 2023; 57:233-238. PMID: 37739662. Full Text

Division of Surgical Oncology, Hepatobiliary and Pancreatic Surgery, Department of Surgery, Stanford University Stanford, CA, USA.
Department of Clinical Nutrition Stanford, CA, USA. Electronic address: kmathias@stanfordhealthcare.org.
Utica Park Clinic Tulsa, OK, USA.
Department of Clinical Nutrition Stanford, CA, USA.
Division of Surgical Oncology, Hepatobiliary and Pancreatic Surgery, Department of Surgery, Stanford University Stanford, CA, USA; Department of Surgery, General Surgery Residency Program, Henry Ford Hospital, Detroit, MI, USA.

BACKGROUND & AIMS: Parenteral nutrition (PN) is commonly utilized to support patients in the perioperative period of major gastrointestinal (GI) surgeries. This study sought to evaluate PN utilization based on malnutrition status and duration of PN use in a single academic institution to evaluate baseline ASPEN recommendation concordance and identify opportunities for quality improvement. METHODS: Patients who had undergone major GI surgical oncology operations and received PN were identified over six months. The medical charts were reviewed for clinicopathologic variables, nutrition status, and the initiation and duration of PN. The cohort was stratified by PN recommendation concordance, and intergroup comparisons were made to identify factors associated with non-concordant utilization of PN. RESULTS: Eighty-one patients were identified, 38.3% of patients were initiated on PN due to dysmotility. Other indications were: intra-abdominal leak (27.2%), mechanical obstruction (18.5%), and failure to thrive (16.0%). Non-concordant PN utilization was identified in 67.9% (55/81) of patients. The most frequent reason for non-concordance was initiation outside the recommended time frame due to severity of malnutrition; well-nourished patients started "too soon" accounted for 29.0% (16/55), and 61.8% started "too late," most of whom were moderately or severely malnourished (34/55). In 16.0% (13/81) of the overall cohort, PN was administered for fewer than five days. CONCLUSIONS: PN use during the perioperative period surrounding major GI oncologic operations is clinically nuanced and frequently not concordant with established ASPEN recommendations. Quality improvement efforts should focus on reducing delayed PN initiation for nutritionally at-risk patients without increasing premature PN use in well-nourished patients.

Surgery

Awtry JA, Abernathy JH, Wu X, Yang J, Zhang M, Hou H, Kaneko T, de la Cruz KI, Stakich-Alpirez K, Yule S, Cleveland JC, Jr., Shook DC, Fitzsimons MG, **Harrington SD**, Pagani FD, and Likosky DS. Evaluating the Impact of Operative Team Familiarity on Cardiac Surgery Outcomes: A Retrospective Cohort Study of Medicare Beneficiaries. *Ann Surg* 2023; Epub ahead of print. PMID: 37753657. Full Text

Division of Cardiac Surgery, Brigham and Women's Hospital, Harvard Medical School, Boston, MA.
Center for Surgery and Public Health, Boston, MA.
Division of Cardiac Anesthesiology, Johns Hopkins University School of Medicine, Baltimore, MD.
Department of Cardiac Surgery, Section of Health Services Research and Quality, Michigan Medicine, Ann Arbor, MI.
Department of Biostatistics, School of Public Health, University of Michigan, Ann Arbor, MI.
Division of Cardiothoracic Surgery, Washington University in St Louis/Barnes-Jewish Hospital, St. Louis, MO.
School of Surgery, University of Edinburgh, Scotland, UK.
Division of Cardiothoracic Surgery, University of Colorado Anschutz Medical Center, Aurora, CO.
Department of Anesthesiology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA.
Department of Anesthesia, Critical Care, and Pain Medicine, Massachusetts General Hospital, Boston, MA.
Henry Ford Macomb Hospital, Clinton Township, MI.
Department of Cardiac Surgery, University of Michigan, Ann Arbor, MI.

OBJECTIVE: To associate surgeon-anesthesiologist team familiarity with cardiac surgery outcomes. BACKGROUND: Team Familiarity (TF), a measure of repeated team member collaborations, has been associated with improved operative efficiency; however, examination of its relationship to clinical outcomes has been limited. METHODS: This retrospective cohort study included Medicare beneficiaries undergoing coronary artery bypass grafting (CABG), surgical aortic valve replacement (SAVR), or both (CABG+SAVR) between 01/01/2017-09/30/2018. Team familiarity was defined as the number of shared procedures between the cardiac surgeon and anesthesiologist within six months of each operation. Primary outcomes were 30- and 90-day mortality, composite morbidity, and 30-day mortality or composite morbidity, assessed before and after risk adjustment using multivariable logistic regression. RESULTS: The cohort included 113,020 patients (84,397 CABG; 15,939 SAVR; 12,684 CABG+SAVR). Surgeon-anesthesiologist dyads in the highest [31631 patients, TF median(interquartile range)=8(6,11)] and lowest [44307 patients, TF=0(0,1)] TF terciles were termed familiar and unfamiliar, respectively. The rates of observed outcomes were lower among familiar versus unfamiliar teams: 30-day mortality (2.8% vs. 3.1%, P=0.001), 90-day mortality (4.2% vs. 4.5%, P=0.023), composite morbidity (57.4% vs. 60.6%, P<0.001), and 30-day mortality or composite morbidity (57.9% vs. 61.1%, P<0.001). Familiar teams had lower overall risk-adjusted odds of 30-day mortality or composite morbidity [aOR 0.894(0.868,0.922), P<0.001], and for SAVR significantly lower 30-day mortality [aOR 0.724(0.547,0.959), P=0.024], 90-day mortality [aOR 0.779(0.620,0.978), P=0.031], and 30-day mortality or composite morbidity [aOR 0.856(0.791,0.927), P<0.001]. CONCLUSIONS: Given its relationship with improved 30-day cardiac surgical outcomes, increasing TF should be considered among strategies to advance patient outcomes.

Surgery

Braciszewski JM, **Hecht LM**, Barnett NP, Moore RS, **Carlin AM**, **Haley EN**, and **Miller-Matero LR**. Preventing alcohol use post-bariatric surgery: patient perspectives on a technology-based approach. *Surg Endosc* 2023; Epub ahead of print. PMID: 37670188. Full Text

Center for Health Policy and Health Services Research, Henry Ford Health, One Ford Place, Suite 5E, Detroit, MI, 48202, USA. jbracis1@hfhs.org.
Center for Health Policy and Health Services Research, Henry Ford Health, One Ford Place, Suite 5E, Detroit, MI, 48202, USA.
Department of Behavioral and Social Sciences, Center for Alcohol and Addiction Studies, Brown University, Providence, USA.
Prevention Research Center, Pacific Institute for Research and Evaluation, Berkeley, USA.
Department of Surgery, Henry Ford Health, Detroit, USA.

Behavioral Health, Henry Ford Health, Detroit, USA.

BACKGROUND: Nearly two-thirds of patients engage in alcohol use after bariatric surgery, while a substantial number meet criteria for alcohol use disorder after their procedure. Given that pre-surgical education may not be sufficient, alternative methods of preventing post-surgical drinking are needed. We sought feedback on a proposed technology-based intervention to reduce alcohol use for individuals who have undergone bariatric surgery. METHODS: Twenty patients who consumed alcohol post-surgery completed qualitative interviews where they provided opinions on sample intervention content, delivery method, timing, and other aspects of a two-session web-based intervention followed by tailored text messaging for 6 months. Interviews were recorded, transcribed, and coded using thematic analysis principles. RESULTS: Participants strongly endorsed using technology to deliver an alcohol intervention, citing the interactivity and personal tailoring available in the proposed software. Education about the effects of post-surgical drinking and learning new coping strategies for social situations were the two most salient themes to emerge from questions about intervention content. Throughout the interviews, participants strongly highlighted the importance of measuring patient readiness to change alcohol use and matching intervention content to such motivation levels. Respondents felt that text messages could extend what they had learned, but also requested additional non-alcohol content (e.g., recipes, exercise tips). Most participants agreed that an online forum consisting of peers and professionals with whom they could ask questions and interact would be useful. CONCLUSION: Web- and text message-based interventions may be an acceptable approach to prevent alcohol use post-bariatric surgery.

Surgery

Chau LC, **Jarman A**, **Prater A**, **Ferguson R**, **Soheim R**, **McFarlin K**, and **Stanton C**. Effect of neuromuscular blockade reversal on post-operative urinary retention following inguinal herniorrhaphy. *Hernia* 2023; Epub ahead of print. PMID: 37737305. Full Text

Department of Surgery, Henry Ford Hospital, Detroit, MI, USA. lchau1@hfhs.org.
Department of Surgery, Henry Ford Hospital, Detroit, MI, USA.
Wayne State University School of Medicine, Detroit, MI, USA.

PURPOSE: This study aims to define the risk of post-operative urinary retention (POUR) following inguinal hernia repair in those that received sugammadex compared to anticholinesterase. METHODS: Adults undergoing inguinal herniorrhaphy from January 2019 to July 2022 with at least 30-day follow-up receiving rocuronium or edrophonium and reversed with an anticholinesterase or sugammadex were included. 1-to-2 propensity score matched models were fitted to evaluate the treatment of effect of sugammadex vs. anticholinesterase on POUR, adjusting for patient comorbidities, ASA class, wound class, operative laterality, urgency of case, and open versus minimally invasive repair. RESULTS: 3345 patients were included in this study with 1101 (32.9%) receiving sugammadex for neuromuscular blockade reversal. The 30-day rate of POUR was 2.8%; 1.4% in the sugammadex and 4.4% in the anticholinesterase group. After propensity score matching, patients receiving sugammadex had significantly lower risk of POUR compared to anticholinesterase overall (OR 0.340, $p < 0.001$, 95% CI 0.198-0.585), in open (OR 0.296, $p = 0.013$, 95% CI 0.113-0.775) and minimally invasive cases (OR 0.36, $p = 0.002$, 95% CI 0.188-0.693), unilateral (OR 0.371, $p = 0.001$, 95% CI 0.203-0.681) and bilateral repairs (OR 0.25, $p = 0.025$, 95% CI 0.074-0.838), elective (OR 0.329, $p < 0.001$, 95% CI 0.185-0.584) and clean cases (OR 0.312, $p < 0.001$, 95% CI 0.176-0.553). CONCLUSIONS: The incidence of 30-day new onset POUR was 2.8%. Sugammadex was associated with significantly lower risk of POUR after inguinal herniorrhaphy compared to anticholinesterase overall and when stratifying by operative modality, laterality, and wound class.

Surgery

Cherabuddi MR, **Shadid AM**, **Obeidat L**, **Jesse M**, and **Bradley P**. Measuring disparities in virtual healthcare and outcomes in chronic obstructive pulmonary disease patients during the COVID-19 pandemic. *J Telemed Telecare* 2023; Epub ahead of print. PMID: 37753613. Full Text

Department of Internal Medicine, Henry Ford Hospital, Detroit, MI, USA. RINGGOLD: 24016
Henry Ford Transplant Institute, Henry Ford Health, Detroit, MI, USA. RINGGOLD: 2971

Department of Pulmonary and Critical Care Medicine, Henry Ford Hospital, Detroit, MI, USA. RINGGOLD: 24016

INTRODUCTION: The use of virtual healthcare increased with the COVID-19 pandemic, even among chronic obstructive pulmonary disease (COPD) patients. We measured disparities in virtual compared to traditional healthcare and outcomes in COPD patients during the pandemic. METHODS: This study retrospectively identified adult patients with virtual or in-person primary care encounters at a large, Midwestern hospital system between March 1, 2020, and June 30, 2020. Data regarding age, sex, race, smoking, area deprivation index (ADI), COPD diagnosis, visit type (office, telephone, video, E-visit, virtual, or hybrid of office and virtual), and time to hospital admission in the following 12 months were collected. Analysis was performed using chi-square, analysis of variance, Kruskal-Wallis rank sum, and Cox proportional modeling. RESULTS: This study identified 86,715 patients. Of those, 4702 had COPD and were more likely to be 65 years or older, White, have higher ADI, use telephone or hybrid visits compared to the rest of the study population and majority had smoking history. Office, telephone, and hybrid visits were used frequently, consistently seen across sex, race, ADI, and smoking categories. Increasing age was associated with increased use of office and telephone visits, and decreased use of video visits. Higher ADI was associated with telephone visits, and lower ADI was associated with video visits. There were no significant differences in overall, COPD, or COVID-19 hospital admission rates across visit types. DISCUSSION: Complex disparities in utilizing traditional healthcare are also reflected in virtual healthcare in COPD patients, and do not significantly affect hospital admissions.

Surgery
Fasano GA, Bayard S, **Chen Y**, Marti J, Simmons R, Swistel A, **Bensenhaver J**, Davis M, and Newman L. ASO Visual Abstract: Survival Outcomes in Women with Unilateral Triple Negative Breast Cancer Correlated with Contralateral Prophylactic Mastectomy. *Ann Surg Oncol* 2023; Epub ahead of print. PMID: 37713121. Full Text

Department of Surgery, New York Presbyterian - Weill Cornell Medicine, New York, NY, USA.
Department of Public Health Sciences, Henry Ford Health System, Detroit, MI, USA.
Department of Surgery, Henry Ford Health System, Detroit, MI, USA.
Department of Surgery, New York Presbyterian - Weill Cornell Medicine, New York, NY, USA. Lan4002@med.cornell.edu.
Department of Breast Surgery, New York Presbyterian - Weill Cornell Medicine, New York, NY, USA. Lan4002@med.cornell.edu.

Surgery
Gill JK, **Bissonette A**, **Cook AA**, **Jaehne AK**, **Day J**, **Renaud S**, **Jacobsen G**, Nelson K, Kozikowski L, **Jayaprakash N**, **Gardner-Gray J**, **Swiderek J**, Oldmixon CF, Ringwood NJ, Sherwin RL, Williams MD, **Gupta AH**, **Johnson NJ**, Hyzy RC, Park PK, and **Rivers EP**. Research Staff COVID-19 Pandemic Survey-Results from the Prevention and Early Treatment of Acute Lung Injury (PETAL) Network. *COVID* 2023; 3(10):1528-1543. PMID: Not assigned. Full Text

1. Department of Emergency Medicine, Henry Ford Hospital, Detroit, MI 48202, USA
2. Department of Pulmonary and Critical Care, Henry Ford Hospital, Detroit, MI 48202, USA
3. Public Health Science, Henry Ford Hospital, Detroit, MI 48202, USA
4. Department of Pulmonary Critical Care, University of Michigan, Ann Arbor, MI 48109, USA
5. Bay State Medical Center, Springfield, MA 01199, USA
6. The PETAL Network Clinical Coordinating Center, Boston, MA 02114, USA
7. Department of Emergency Medicine, Detroit Medical Center, Detroit, MA 48201, USA
8. Department of Pulmonary and Critical Care, Indiana University School of Medicine, Indianapolis, IN 46202, USA
9. Department of Surgery & Critical Care, Henry Ford Hospital, Detroit, MI 48202, USA
10. Department of Emergency Medicine & Pulmonary Critical Care, University of Washington, Seattle, WA 98195, USA
11. Department of Surgery, University of Michigan, Ann Arbor, MI,48109, USA

Objectives: There is a lack of knowledge about the challenges of researchers who continued in-person research during the early phases of the COVID-19 pandemic. Design: Electronic survey assessing work-related exposure to COVID-19, logistical challenges, and procedural changes during the first year of the COVID-19 pandemic on clinical research. Setting: National Heart, Lung, and Blood Institute-sponsored Prevention and Early Treatment of Acute Lung Injury Clinical Trial Network Centers. Subjects: Research staff at research Network Sites. Measurements and Main Results: The 37-question survey was completed by 277 individuals from 24 states between 29 September 2020, and 12 December 2020, yielding a response rate of 37.7%. Most respondents (91.5%) indicated that non-COVID-19 research was affected by COVID-19 research studies. In response to the COVID-19 pandemic, 20% of respondents were reassigned to different roles at their institution. Many survey takers were exposed to COVID-19 (56%), with more than 50% of researchers requiring a COVID-19 test and 8% testing positive. The fear of infection was 2.7-times higher compared to pre-COVID-19 times. Shortages of personal protective equipment were encountered by 34% of respondents, primarily due to lack of access to N95 masks, followed by gowns and protective eyewear. Personal protective equipment reallocation from research to clinical use was reported by 31% of respondents. Most of the respondents (88.5%), despite these logistical challenges, indicated their willingness to enroll COVID-19 patients. Conclusions: During the first year of the COVID-19 pandemic, members of the research network were engaged in COVID-19 research despite logistical challenges, limited access to personal protective equipment, and fear of exposure. The research network's survey experience can inform ongoing policy discussions to create research enterprises that can dexterously refocus research to address the knowledge gaps associated with novel public health emergencies while mitigating the effect of pandemics on existing research projects and research personnel.

Surgery

Hider AM, **Johanson H**, Bonham AJ, Ghaferi AA, Finks J, Ehlers AP, **Carlin AM**, and **Varban OA**. Evaluating outcomes among surgeons who changed their technique for gastric bypass: a state-wide analysis from 2011 to 2021. *Surg Endosc* 2023; Epub ahead of print. PMID: 37740112. Full Text

Department of Surgery, Michigan Medicine, University of Michigan Medical School, 1500 E Medical Center Drive, 2210 Taubman Center, Ann Arbor, MI, 48109, USA. amhider@med.umich.edu.
Department of Surgery, Henry Ford Health, Detroit, MI, USA.
Center for Healthcare Outcomes and Policy, University of Michigan, Ann Arbor, MI, USA.
Michigan Bariatric Surgery Collaborative, Ann Arbor, MI, USA.
Department of Surgery, Medical College of Wisconsin, Milwaukee, WI, USA.
Department of Surgery, Michigan Medicine, University of Michigan Medical School, 1500 E Medical Center Drive, 2210 Taubman Center, Ann Arbor, MI, 48109, USA.

INTRODUCTION: Technical variation exists when performing the gastrojejunostomy during Roux-en-Y gastric bypass (RYGB). However, it is unclear whether changing technique results in improved outcomes or patient harm. METHODS: Surgeons participating in a state-wide bariatric surgery quality collaborative who completed a survey on how they perform a typical RYGB in 2011 and again in 2021 were included in the analysis (n = 31). Risk-adjusted 30-day complication rates and case characteristics for cases in 2011 were compared to those in 2021 among surgeons who changed their gastrojejunostomy technique from end-to-end anastomosis (EEA) to either a linear staple or handsewn anastomosis (LSA/HSA). In addition, case characteristics and outcomes among surgeons who maintained an EEA technique throughout the study period were assessed. RESULTS: A total of 15 surgeons (48.3%) changed their technique from EEA to LSA/HSA while 7 surgeons (22.3%) did not. Nine surgeons did LSA or HSA the entire period and therefore were not included. Surgeons who changed their technique had significantly lower rates of surgical complications in 2021 when compared to 2011 (1.9% vs 5.1%, p = 0.0015), including lower rates of wound complications (0.5% vs 2.1%, p = 0.0030) and stricture (0.1% vs 0.5%, p = 0.0533). Likewise, surgeons who did not change their EEA technique, also experienced a decrease in surgical complications (1.8% vs 5.8%, p < 0.0001), wound complications (0.7% vs 2.1%, p < 0.0001) and strictures (0.2% vs 1.2%, p = 0.0006). Surgeons who changed their technique had a significantly higher mean annual robotic bariatric volume in 2021 (30.0 cases vs 4.9 cases, p < 0.0001) when compared to those who did not. CONCLUSIONS: Surgeons who changed their gastrojejunostomy technique from circular stapled to handsewn demonstrated greater utilization of the robotic platform than those who did not and

experienced a similar decrease in adverse events during the study period, despite altering their technique. Surgeons who chose to modify their operative technique may be more likely to adopt newer technologies.

Surgery
Nathanson SD, Dieterich LC, Zhang XH, **Chitale DA**, Pusztai L, Reynaud E, Wu YH, and Ríos-Hoyo A. Associations amongst genes, molecules, cells, and organs in breast cancer metastasis. *Clin Exp Metastasis* 2023; Epub ahead of print. PMID: 37688650. Full Text

Department of Surgery, Henry Ford Health, 2799 W. Grand Blvd, Detroit, MI, 48202, USA. dnathan1@hfhs.org.
Cancer Center, Henry Ford Health, Detroit, MI, USA. dnathan1@hfhs.org.
European Center for Angioscience (ECAS), Medical Faculty Mannheim of Heidelberg University, Mannheim, Germany.
Lester and Sue Smith Breast Center, Dan L. Duncan Cancer Center, Department of Molecular and Cellular Biology, Baylor College of Medicine, Houston, TX, USA.
Department of Pathology, Henry Ford Health, Detroit, MI, USA.
Yale Cancer Center, Yale School of Medicine, New Haven, Connecticut, USA.

This paper is a cross fertilization of ideas about the importance of molecular aspects of breast cancer metastasis by basic scientists, a pathologist, and clinical oncologists at the Henry Ford Health symposium. We address four major topics: (i) the complex roles of lymphatic endothelial cells and the molecules that stimulate them to enhance lymph node and systemic metastasis and influence the anti-tumor immunity that might inhibit metastasis; (ii) the interaction of molecules and cells when breast cancer spreads to bone, and how bone metastases may themselves spread to internal viscera; (iii) how molecular expression and morphologic subtypes of breast cancer assist clinicians in determining which patients to treat with more or less aggressive therapies; (iv) how the outcomes of patients with oligometastases in breast cancer are different from those with multiple metastases and how that could justify the aggressive treatment of these patients with the hope of cure.

Surgery
Ramirez JL, Kim E, Fregenal AC, Vigran HJ, Hughes SE, Reynolds CW, Varban OA, **Carlin AM**, Ehlers AP, Bonham AJ, and Finks JF. Depression as a risk factor for adverse outcomes and increased healthcare utilization in bariatric surgery patients. *Surg Endosc* 2023; Epub ahead of print. PMID: 37735218. Full Text

University of Michigan Medical School, Ann Arbor, MI, USA.
University of Michigan Medical School, Ann Arbor, MI, USA. erkim@med.umich.edu.
Department of Surgery, University of Michigan Health Systems, Ann Arbor, MI, USA.
Center for Healthcare Outcomes and Policy, University of Michigan, Ann Arbor, MI, USA.
Department of Surgery, Henry Ford Health System, Detroit, MI, USA.

INTRODUCTION: Depression is strongly associated with obesity and is common among patients undergoing bariatric surgery. Little is known about the impact of depression on early postoperative outcomes or its association with substance use. METHODS: The Michigan Bariatric Surgery Collaborative is a statewide quality improvement program that maintains a large clinical registry. We evaluated patients undergoing primary Roux-en-Y gastric bypass or sleeve gastrectomy between 2017 and 2022. Patients self-reported symptoms of depression (PHQ-8) and use of alcohol (AUDIT-C), smoking, prescription opiates, and marijuana at baseline. Preoperative PHQ-8 scores stratified patients based on severity: no depression (0-4), mild (5-9), moderate (10-14), or severe (15-24). We compared 30-day outcomes and substance use between patients with and without depression. RESULTS: Among 44,301 patients, 30.8% had some level of depression, with 19.8% mild, 7.5% moderate, and 3.5% severe. Patients with depression were more likely to have an extended length of stay (LOS) (> 3 days) than those without depression (no depression 2.1% vs. severe depression 3.0%, p = 0.0452). There were no significant differences between no depression and severe depression groups in rates of complications (5.7% vs. 5.2%, p = 0.1564), reoperations (0.9%, vs. 0.8%, p = 0.7394), ED visits (7.7% vs. 7.8%, p = 0.5353), or

readmissions (3.2% vs. 3.9%, p = 0.3034). Patients with severe depression had significantly higher rates of smoking (9.7% vs. 12.5%, p < 0.0001), alcohol use disorder (8.6% vs. 14.0%, p < 0.0001), opiate use (14.5% vs. 22.4%, p < 0.0001) and marijuana use (8.4%, vs. 15.5%, p = 0.0008). CONCLUSIONS: This study demonstrated that nearly one-third of patients undergoing bariatric surgery have depression, with over 10% in the moderate to severe range. There was a significant association between preoperative depressive symptoms and extended LOS after bariatric surgery, as well as higher rates of smoking and use of marijuana, prescription opiates and alcohol. There was no significant effect on adverse events or other measures of healthcare utilization.

Surgery
Tignanelli CJ, Arbabi S, Iskander G, **Kralovich K**, Scott J, Sangji NF, and Hemmila MR. Association of Discontinuing Preinjury Beta-Adrenergic Blockade Medications With Mortality in Severe Blunt Traumatic Brian Injury. *Ann Surg Open* 2023; 4(3):e324. PMID: 37746607. Full Text

From the Department of Surgery, University of Minnesota, Minneapolis, MN.
Department of Surgery, University of Washington, Seattle, WA.
Division of Acute Care Surgery, Spectrum Health, Grand Rapids, MI.
Department of Surgery, Henry Ford Hospital, Detroit, MI.
Department of Surgery, University of Michigan, Ann Arbor, MI.

BACKGROUND: Beta-adrenergic receptor blocker (BB) administration has been shown to improve survival after traumatic brain injury (TBI). However, studies to date that observe a benefit did not distinguish between continuation of preinjury BB versus de novo initiation of BB. OBJECTIVES: To determine the effect of continuation of preinjury BB and de novo initiation of BB on risk-adjusted mortality and complications for patients with TBI. METHODS: Trauma quality collaborative data (2016-2021) were analyzed. Patients were excluded with hospitalization <48 hours, direct admission, or penetrating injury. Severe TBI was identified as a head abbreviated injury scale (AIS) value of 3 to 5. Patients were placed into 4 groups based on the preinjury BB use and administration of BB during hospitalization. Propensity score matching was used to create 1:1 matched cohorts of patients for comparisons. Odd ratios of mortality accounting for hospital clustering were calculated. A sensitivity analysis was performed excluding patients with AIS >2 injuries in all other body regions to create a cohort of isolated TBI patients. RESULTS: A total of 15,153 patients treated at 35 trauma centers were available for analysis. Patients were divided into 4 cohort groupings related to preinjury BB use and postinjury receipt of BB. The odds of mortality was significantly reduced for patients with a TBI on a preinjury BB who had the medication continued in the acute setting (as compared with patients on preinjury BB who did not) (odds ratio [OR], 0.73; 95% confidence interval [CI], 0.54-0.98; P = 0.04). Patients with a TBI who were not on preinjury BB did not benefit from de novo initiation of BB with regard to mortality (OR, 0.83; 95% CI, 0.64-1.08; P = 0.2). In the sensitivity analysis, excluding polytrauma patients, patients on preinjury BB who had BB continued had a reduction in mortality when compared with patients in which BB was stopped following a TBI (OR, 0.65; 95% CI, 0.47-0.91; P = 0.01). CONCLUSIONS: Continuing BB is associated with reduced odds of mortality in patients with a TBI on preinjury BB. We were unable to demonstrate benefit from instituting beta blockade in patients who are not on a BB preinjury.

Surgery
Wonski BT, Patel B, **Tepper DG**, **Siddiqui A**, **Kabbani LS**, and Lam MT. Adipose-derived stem cells significantly increases collagen level and fiber maturity in patient-specific biological engineered blood vessels. *PLoS One* 2023; 18(9):e0291766. PMID: 37738272. Full Text

Department of Biomedical Engineering, Wayne State University, Detroit, Michigan, United States of America.
Department of Plastic and Reconstructive Surgery, Henry Ford Health System, Detroit, Michigan, United States of America.
Department of Vascular Surgery, Henry Ford Health System, Detroit, Michigan, United States of America.

Tissue engineering has driven significant research in the strive to create a supply of tissues for patient treatment. Cell integration into engineered tissues maximizes functional capabilities, however, issues of

rejection remain. Autologous cell sources able to solve this issue are difficult to identify for tissue engineering purposes. Here, we present the efficacy of patient-sourced cells derived from adipose (adipose-derived stem cells, ASCs) and skin tissue (dermal fibroblasts, PtFibs) to build a combined engineered tunica media and adventitia graft, respectively. Patient cells were integrated into our lab's vascular tissue engineering technique of forming vascular rings that are stacked into a tubular structure to create the vascular graft. For the media layer, ASCs were successfully differentiated into the smooth muscle phenotype using angiotensin II followed by culture in smooth muscle growth factors, evidenced by significantly increased expression of αSMA and myosin light chain kinase. Engineered media vessels composed of differentiated ASCs (ASC-SMCs) exhibited an elastic modulus (45.2 ± 18.9 kPa) between that of vessels of undifferentiated ASCs (71.8 ± 35.3 kPa) and control human aortic smooth muscle cells (HASMCs; 18.7 ± 5.49 kPa) ($p<0.5$). Tensile strength of vessels composed of ASCs (41.3 ± 15.7 kPa) and ASC-SMCs (37.3 ± 17.0 kPa) were higher compared to vessels of HASMCs (28.4 ± 11.2 kPa). ASC-based tissues exhibited a significant increase in collagen content and fiber maturity- both factors contribute to tissue strength and stability. Furthermore, vessels gained stability and a more-uniform single-tubular shape with longer-term 1-month culture. This work demonstrates efficacy of ASCs and PtFibs to create patient-specific vessels.

Urology

Dielubanza EJ, **Arora S**, and **Atiemo HO**. Diversity in Urology, Are We Moving in the Right Direction?: Analysis of American Urologic Association Urology Residency Match Statistics 2019-2023. *Urol Clin North Am* 2023; 50(4):495-500. PMID: 37775208. Full Text

Brigham and Women's Hospital, 45 Francis Street, Boston, MA 02115, USA.
Vattikuti Urology Institute Henry Ford Health, 2799 West Grand Boulevard, K9, Detroit, MI 48202, USA.
Vattikuti Urology Institute Henry Ford Health, 2799 West Grand Boulevard, K9, Detroit, MI 48202, USA. Electronic address: hatiemo1@hfhs.org.

Analysis of the urology match statistics provides a window into the future of the urology workforce. Match statistics from 2019 to 2023 were analyzed to determine whether the efforts to promote diversity in 2020 have been impactful. The popularity in the field of urology among all racial/ethnic groups peaked interest in application in 2022. However despite an increase in URIM applicants over the last 5 years, 2023 URM applicants have 1/3 the odds of matching into urology as white applicants.

Urology

Nyati S, **Stricker H**, **Barton KN**, **Li P**, **Elshaikh M**, **Ali H**, **Brown SL**, **Hwang C**, **Peabody J**, **Freytag SO**, **Movsas B**, and **Siddiqui F**. A phase I clinical trial of oncolytic adenovirus mediated suicide and interleukin-12 gene therapy in patients with recurrent localized prostate adenocarcinoma. *PLoS One* 2023; 18(9):e0291315. PMID: 37713401. Full Text

Department of Radiation Oncology, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Radiology, College of Osteopathic Medicine, Michigan State University, East Lansing, Michigan, United States of America.
Vattikuti Urology Institute, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Public Health Sciences, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
Department of Internal Medicine, Henry Ford Cancer Institute, Henry Ford Health, Detroit, Michigan, United States of America.
College of Human Medicine, Michigan State University, East Lansing, Michigan, United States of America.

In a phase I dose escalation and safety study (NCT02555397), a replication-competent oncolytic adenovirus expressing yCD, TK and hIL-12 (Ad5-yCD/mutTKSR39rep-hIL-12) was administered in 15 subjects with localized recurrent prostate cancer (T1c-T2) at increasing doses (1 × 1010, to 1 × 1012 viral particles) followed by 7-day treatment of 5-fluorocytosine (5-FC) and valganciclovir (vGCV). The primary

endpoint was toxicity through day 30 while the secondary and exploratory endpoints were quantitation of IL-12, IFNγ, CXCL10 and peripheral blood mononuclear cells (PBMC). The study maximum tolerated dose (MTD) was not reached indicating 1012 viral particles was safe. Total 115 adverse events were observed, most of which (92%) were grade 1/2 that did not require any treatment. Adenoviral DNA was detected only in two patients. Increase in IL-12, IFNγ, and CXCL10 was observed in 57%, 93%, and 79% patients, respectively. Serum cytokines demonstrated viral dose dependency, especially apparent in the highest-dose cohorts. PBMC analysis revealed immune system activation after gene therapy in cohort 5. The PSA doubling time (PSADT) pre and post treatment has a median of 1.55 years vs 1.18 years. This trial confirmed that replication-competent Ad5-IL-12 adenovirus (Ad5-yCD/mutTKSR39rep-hIL-12) was well tolerated when administered locally to prostate tumors.

Conference Abstracts

Dermatology
Elhage K, **Kwa M**, and **Lim H**. 42445 Eruptive Keratoacanthoma of Grzybowski in an African American Female. *J Am Acad Dermatol* 2023; 89(3):AB45. Full Text

A 62-year-old African American female patient without significant past medical history was referred for diffuse pruritic hyperkeratotic papules for the past two years. She was developing more lesions over time, involving the head, neck, trunk, and extremities with refractory pruritus. No new medication was started at time of onset of lesions. There was no family history of such disease. On examination, her scalp, neck, and back were covered with innumerable dome-shaped, keratotic papules in both photodistributed and non-photodistributed areas (inguinal folds, buttocks). She had ectropion of her bilateral eyelids. Numerous skin biopsies of separate papules (>10) demonstrated atypical squamous proliferations, some of which were more clearly defined invasive, well-differentiated squamous cell carcinomas. CBC and CMP were within normal limits. Given the patient's clinical presentation and pathology findings, she was diagnosed with eruptive keratoacanthoma of Grzybowski (GEKA). GEKA is a rare variant of keratoacanthoma. First described in the 1950s, its pathogenesis remains unclear. It is distinct from other forms of induced KA (e.g. drug, trauma) and is distinguished from other KA syndromes by its lack of inheritance, onset in late adulthood, and generalized distribution involving hundreds of lesions consistent with keratoacanthomas. Variable criteria include masked facies, mucosal lesions, ectropion, and crateriform nodules. GEKA is notably refractory to treatment. Retinoids are the most common agents trialed and can be combined with methotrexate. Other treatments include cyclophosphamide, photodynamic therapy, and H2 blockers. To our knowledge, this is the only case documenting this rare condition in a patient with skin of color.

Dermatology
Gold LS, Golant A, Serrao R, Tallman AM, and Brown PM. 41574 Tapinarof Cream 1% Once Daily (QD) for Plaque Psoriasis: Psoriasis Area and Severity Index Score by Body Region for the PSOARING 1 and 2 Trials. *J Am Acad Dermatol* 2023; 89(3):AB92. Full Text

Tapinarof cream 1% QD demonstrated statistically significant efficacy and was well tolerated in adults with mild to severe plaque psoriasis in two 12-week, vehicle-controlled, pivotal, phase 3 trials, PSOARING 1 and 2. All primary and secondary efficacy endpoints were met, including ≥75% and ≥90% improvement in Psoriasis Area and Severity Index (PASI). PASI is a composite assessing psoriasis severity and extent across four regions (head/neck, trunk [includes genitalia], upper extremities, lower extremities [includes buttocks]); scores range from 0–72. Local efficacy, including hard-to-treat areas, can be evaluated using regional treatment responses. We present post hoc analyses of PASI by body region in these pivotal trials. At baseline, 79.2%–83.9% of patients had a Physician Global Assessment score of 3 (moderate) and mean PASI score of 8.9–9.1, respectively. At Week 12 from baseline, least squares (LS) mean overall PASI improvements for tapinarof versus vehicle in PSOARING 1 and 2 were: –5.7 vs –2.1 and –5.7 vs –0.8, respectively (both P<0.0001). LS mean changes from baseline in PASI scores by body region were: head/neck –4.8 vs –1.5 and –5.0 vs –1.7 (both P<0.0001); trunk –4.3 vs –1.5 and –4.6 vs –0.4 (both P<0.0001); upper extremities –7.1 vs –3.4 and –7.2 vs –1.4 both P<0.0001); and lower extremities –6.1 vs –2.0 and –6.0 vs –0.5 (both P<0.0001). Tapinarof cream 1% QD demonstrated

consistent efficacy overall and across body regions as measured by PASI, supporting its use in patients with mild to severe plaque psoriasis irrespective of location, including intertriginous and sensitive skin.

Dermatology
Gooderham M, Simpson E, Geng B, **Stein Gold LF**, Wollenberg A, Farooqui SA, Zhang F, Feeney C, Watkins M, and Koppensteiner H. 44180 Influence of Baseline Disease Severity Defined by Investigator's Global Assessment on Abrocitinib Efficacy for up to 96 Weeks in Patients With Moderate-to-Severe Atopic Dermatitis: Interim Analysis of JADE EXTEND, a Long-Term Extension Study. *J Am Acad Dermatol* 2023; 89(3):AB181. Full Text

Background: Long-term efficacy with 48 weeks of abrocitinib treatment has been demonstrated to be comparable to efficacy at week 12 in patients with moderate-to-severe atopic dermatitis (AD). Longer-term efficacy data stratified by baseline disease severity are needed. Patients from JADE-MONO-1, JADE- MONO-2, JADE-COMPARE, JADE-TEEN, and JADE-DARE who were randomly assigned to abrocitinib or placebo and subsequently enrolled into phase 3 long-term extension study JADE-EXTEND (NCT03422822) were analyzed. Data cutoff: September 25, 2021. At the relevant qualifying parent study baseline, Investigator's Global Assessment (IGA) was moderate in 61% (n=574) and severe in 39% (n=367) of patients treated with abrocitinib 200 mg once daily (QD), and moderate in 64% (n=461) and severe in 36% (n=264) of patients treated with abrocitinib 100 mg QD. After 96 weeks of treatment with abrocitinib 200 mg QD, IGA clear/almost clear was achieved by 61% and 46% of patients in the moderate and severe baseline IGA subgroups, Eczema Area and Severity Index 2:75% improvement (EASI-75) by 86% and 84%, and Peak Pruritus Numerical Rating Scale 2:4-point improvement (PP-NRS4) by 66% and 74%, respectively (as observed). After 96 weeks of treatment with abrocitinib 100 mg QD, IGA clear/almost clear was achieved by 51% and 36% of patients in the moderate and severe baseline IGA subgroups, EASI-75 by 77% and 77%, and PP-NRS4 by 61% and 59%, respectively (as observed). Long- term treatment with abrocitinib to week 96 resulted in clinically meaningful improvement in signs and symptoms of AD for patients with moderate or severe disease at baseline.

Dermatology
Hengy M, **Artz C**, and **Friedman B**. 44222 Primary Cutaneous Adenoid Cystic Carcinoma: Report of a Rare Tumor with Review of the Literature. *J Am Acad Dermatol* 2023; 89(3):AB211. Full Text

Background: A 53 year-old female presented with a 1-year history of a nodule on left parietal scalp. Physical examination revealed a 1cm subcutaneous nodule, with no overlying surface change. The lesion was presumed to be a cyst and treatment options included observation versus excision. The patient initially opted for observation, but returned 33 months later due to persistent enlargement. Punch biopsy revealed variably-sized cribriform nests of basaloid cells with abundant dermal mucin. Immunohistochemistry labeled tumor cells with CAM 5.2, CK7, P63, CD117, and EMA. Sequencing panel failed to detect a MYB fusion, though the constellation of findings were consistent with primary cutaneous adenoid cystic carcinoma (PCACC). Computed tomography imaging of head, neck, chest, and abdomen failed to reveal any metastasis. Treatment consisted of a wide local excision, which achieved clear histological margins and no perineural invasion. Compared to its more common salivary gland counterpart, PCACC represents a small subset of adenoid cystic carcinoma which can occur in various other organs. Approximately half of cases occur on head/neck, presenting as slow-growing, nondescript nodules that mimic more common benign cutaneous tumors and cysts. A subset of cases may develop local recurrences and rarely metastasis, often associated with one or more of the following features: perineural invasion, lesion diameter 2: 1 cm, involvement of subcutaneous fat, and widely infiltrative border. Due to the propensity for local recurrence, excision with two-centimeter margins has been advised. Small series have also demonstrated good outcomes with Mohs Micrographic Surgery, though sample sizes and follow up times were limited.

Dermatology
Jafry M, and **Powers M**. 44555 A National Cancer Database Analysis of Pleomorphic Dermal Sarcoma. *J Am Acad Dermatol* 2023; 89(3):AB111. Full Text

Background: Purpose: Pleomorphic dermal sarcoma (PDS) is a mesenchymal neoplasm, within the spectrum of atypical fibroxanthoma, that presents with more aggressive behavior. No recent studies have examined national incidence and mortality from PDS in the last 20 years. As such, this study examines the incidence of, associated patient characteristics, and risk factors for PDS over 1979-2019. Design: An analysis was conducted of data procured from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) registry. All cases of pleomorphic dermal sarcoma in between the years 1979-2019 were examined. A descriptive analysis was performed on patient characteristics. SEER*Stat and STATA were used to create a Kaplan-Meier survival curve and conduct a multivariable cox regression for 15-year-disease specific outcomes. Findings: The incidence of PDS between 1979 and 2019 decreased from 0.622 per 100,000 cases to 0.306 per 100,000 cases. Of the patients diagnosed with PDS in this 40-year span, 45.3% were between the ages of 60-79, 62.4% were male, and 87.5% were white. Mortality rates were lower for patients diagnosed between 2000-2018 as compared to those diagnosed between 1979-1999. Moreover, older age, non-white race, and non-head/neck site of involvement were associated with increased mortality between 1979-2019. Summary: The incidence of and mortality from PDS have decreased between 1979 and 2019. Most patients diagnosed with PDS between 1979 and 2019 were older, male, and white. Furthermore, mortality rates were highest in patients who were older, non-white, and those with malignancy of non-head/neck areas.

Dermatology
Ko D, **Artz C**, and **Kohen L**. 43533 Virtual dermoscopy course series in the improvement of resident education. *J Am Acad Dermatol* 2023; 89(3):AB248. Full Text

Background: Dermoscopy is an essential part of a dermatology resident's training. Thus, formal training in dermoscopy through lectures should be a part of the residency curriculum to foster confidence and skill using the dermatoscope. A quality improvement study was conducted to assess the utility of a virtual dermoscopy course series in improving resident education, skills, and ability to correctly identify skin lesions. Twenty-one 1-hour virtual dermoscopy lectures were held each academic year, from July 2020 to June 2023. Pre-course and post-course surveys were sent out to all resident participants, assessing their comfort and confidence in identifying dermoscopic features and patterns. In the July 2022 to June 2023 academic year, pre-course and post-course quizzes were introduced, in addition to the surveys, to also measure objective data. The results from the surveys show that the post-course participants were more comfortable with differentiating colors, recognizing pigment patterns including: starburst, multifocal, central, eccentric, and uniform pigment, inspecting special site nevi, recognizing melanoma-associated features such as pseudopods, blue-gray dots, regression, and identifying features of basal cell carcinoma and squamous cell carcinoma ($p<0.05$). The pre- and post-course quiz data will be analyzed after the post-course quiz is given at the end of this academic year. Future analyses will include objective data with a larger sample size. In conclusion, although data from only 2 years were collected and analyzed, the virtual dermoscopy course series improved residents' subjective ability and confidence to identify various features and patterns seen in melanoma, basal cell and squamous cell carcinomas.

Dermatology
Kwa M, Guttentag A, Chase L, van Meijgaard J, and **Lim H**. 42231 Trends In Price for Topical Corticosteroids from 2017-2021 and the Opportunity for Cost Savings Identifiable at the Point of Care: a Retrospective Study. *J Am Acad Dermatol* 2023; 89(3):AB100. Full Text

Background: Topical corticosteroids possess numerous generics and similar strength substitutes. Knowledge of affordability and costs can impact the ability of patients to obtain the medication prescribed. Methods: We analyzed all prescriptions dispensed for topical corticosteroids from January 2017 through December 2021 using an all-payer pharmacy-claims database across 54,078 chain and independent pharmacies in 13,465 zip codes in 50 states in addition to a commercial coupon dataset. Results: A total of 236 unique drug products (> 1 claim) were identified. Branded ultrapotent corticosteroids had the highest price per unit (median[interquartile range]: $18.02 [$9.35-18.45]) while generic medium potency corticosteroids had the lowest ($2.17 [$1.01-3.88]). Factors that predicted for higher cost ($p<0.05$) were branded products (105% more expensive) and ultrapotent class (57% more expensive) while ointments predicted for lower cost (21% less expensive). Cash prices remained relatively stable during 2017-2021, with the exception being ultrapotent branded topical corticosteroids (63% increase). Cost savings from

switching from commonly filled most expensive to least expensive alternative across all potency classes was $8.87 per unit, with the greatest savings for higher potency classes. Coupon prices for drugs are consistently lower than cash prices, with a correlation coefficient of 0.83. Conclusions: Topical corticosteroid prices over the past five years have stabilized, the exception being branded ultrapotent corticosteroids. The cheapest generics per potency class remained so over the five years. Savings from switching remain significant despite price stabilization. Coupon prices mirror the hierarchy of costs based on cash prices and can help assess real time cost of topical corticosteroids.

Dermatology
Layton AM, Alexis A, Baldwin H, Bettoli V, Del Rosso JQ, Dreno B, **Gold LS**, Harper J, Weiss J, and Tan J. 41942 Improving Acne Care Recommendations From Personalising Acne: Consensus Of Experts (PACE). *J Am Acad Dermatol* 2023; 89(3):AB56. Full Text

Introduction: Current acne guidelines provide limited advice about long-term management of patients with acne, despite that acne sequelae are common and burdensome to patients. An international group of dermatologists formed the Personalising Acne: Consensus of Experts (PACE) and have worked to provide recommendations addressing varying presentations of the disease during the chronic acne patient journey. Objectives: To create practical recommendations to address gaps that exist in traditional guidelines, such as how to address non-facial acne and sequelae such as scarring and post-inflammatory hyperpigmentation (PIH). The PACE group also evaluated how acne impacts patients from a quality of life (QOL) perspective. Materials and Method: The PACE panel included 17 international dermatologists that used investigative survey questions and a modified Delphi approach by electronic survey to reach consensus. A Personalised Acne Care Pathway (PACP) was created based on consensus statements and multiple group discussions. QOL impacts were also assessed via online survey and a treatment algorithm was created. Results: The PACP encompasses patient profile and prognostic factors that can affect the patient journey, goal setting and managing expectations, goals of treatment for the initiation/modification phase as well as maintenance/modification phase, and also managing acne sequelae. In addition, the online survey of QOL found that patients with facial and truncal acne have a burden that exceeds that of patients with facial acne alone and should be an important consideration in management. Conclusions: This work helps clinicians to design personalized care pathways for acne patients and to understand how acne affects patient well-being.

Dermatology
Mease PJ, Hatemi G, Paris M, Cheng S, Maes P, Zhang W, Shi R, Flower A, and **Gold LS**. 40666 Long-term Safety of Apremilast From a Pooled Analysis of 15 Randomized, Placebo-Controlled Studies of Psoriasis, Psoriatic Arthritis, and Oral Ulcers Associated With Behçet's Syndrome. *J Am Acad Dermatol* 2023; 89(3):AB190. Full Text

Background: As of March 20, 2022, 706,585 patients (557,379 patient-years of exposure) have been treated with apremilast worldwide for approved indications: plaque psoriasis, psoriatic arthritis, and oral ulcers associated with Behçet’s syndrome. This analysis is the largest yet that focuses on long-term safety of apremilast. Methods: Data from up to 5 years’ exposure were pooled from 15 randomized, placebo-controlled studies across 3 indications and divided into placebo-controlled and all apremilast exposure groups. Long-term safety and tolerability of apremilast 30 mg BID were analyzed. Treatment-emergent adverse events (TEAEs) were assessed, focusing on TEAEs of special interest. Results: The analysis included 4,183 patients exposed to apremilast (6,788 patient-years). TEAEs were primarily mild to moderate in the placebo-controlled period (96.6%) and throughout all apremilast exposure (91.6%). Rates of TEAEs of special interest were similar between placebo and apremilast groups in the placebo-controlled period. For all apremilast exposure, the exposure-adjusted incident rate per 100 patient-years was: •6.20, any serious TEAE; •1.78, depression; •1.10, serious infections; •1.04, malignancies (0.48, nonmelanoma skin cancer; 0.03, lymphomas); •0.30, major adverse cardiac events; •0.21, serious opportunistic infections; •0.10, venous thromboembolism events (deep vein thrombosis [0.07] and pulmonary embolism [0.03]). The most common TEAEs were diarrhea, nausea, headache, upper respiratory tract infection, and nasopharyngitis. Conclusions: The incidence of TEAEs of special interest and serious TEAEs was low despite long term apremilast exposure, further establishing apremilast as a

safe oral option with a favorable benefit-risk profile for long-term treatment for psoriasis, psoriatic arthritis, and oral ulcers associated with Behçet's syndrome.

Dermatology
Merola JF, Ogdie A, Gottlieb AB, **Gold LS**, Flower A, Jardon S, Deignan C, and Lebwohl M. 42166 Impact of Psoriasis in Special Areas on Patient Quality-of-Life Outcomes: Findings From the UPLIFT Survey in the United States. *J Am Acad Dermatol* 2023; 89(3):AB176. Full Text

Background: In the global UPLIFT survey, patients with psoriasis in special areas (face, scalp, palms/soles, nails, genitals) and limited skin involvement reported high disease burden. We evaluated the impact of special area involvement on quality-of-life (QoL). Methods: UPLIFT, a multinational Web- based survey of adults with self-reported, healthcare provider–diagnosed psoriasis, was conducted March 2–June 3, 2020. We report Dermatology Life Quality Index (DLQI) results for the subset of respondents from the United States. Results: In UPLIFT, 53.2% of 1,006 US patients had psoriasis; 39.7% had psoriasis with concurrent psoriatic arthritis. Between 60.8%–86.1% of patients had a DLQI score 2:6 (at least moderately impacted QoL) across affected body surface area (BSA) subgroups (<3%, 4%–10%, >10%). In patients with psoriasis in 2:1 special area (n=701), the proportion with a DLQI score 2:21 (extremely large effect) was twice that of patients without psoriasis in special areas (n=228; 21.3% vs 10.1%, respectively). The proportions of patients with DLQI score 2:6 by special area were 75.9% (face), 73.0% (palms and/or soles), 59.5% (scalp), and 58.2% (genitals).Overall, mean scores for individual DLQI questions were greater for patients with special area involvement than those without special area involvement, particularly for pain/itch, embarrassment, and influence on clothes. Conclusions: A significant impact of psoriasis on QoL was observed regardless of extent of BSA affected. Involvement of special areas, especially face and palms and/or soles, had a large effect on DLQI. Special area involvement is an important clinical consideration for QoL, even in patients with limited skin involvement.

Dermatology
Mueller A, **Kwa M**, and **Kerr H**. 40528 Administration of bortezomib in patients with refractory scleromyxedema: A case report. *J Am Acad Dermatol* 2023; 89(3):AB117. Full Text

Background: We present a case of refractory scleromyxedema, a rare cutaneous mucinosis, treated with bortezomib and dexamethasone. To our knowledge, this case documents the longest duration of remission to date. Case: A 58-year-old African American female presented with a one year history of scattered monomorphic erythematous cobblestone papules/plaques on bilateral legs and extensor arms. Workup was significant for monoclonal IgG kappa protein. Skin and bone marrow biopsy revealed mucin deposition and plasma cell myeloma, respectively. Initially, she responded to intravenous IVIG from 2014-2016, but was discontinued due to debilitating migraines. Approximately 60- 70% resolution of plaques was achieved with subcutaneous immunoglobulin, plaquenil, and prednisone. However, she eventually relapsed with increased thickened pruritic facial plaques. Dermatology recommended bortezomib and dexamethasone in 2019. She received three cycles but discontinued treatment due to bilateral leg neuropathy. Despite this, bortezomib and dexamethasone has resulted in a 3-year remission. Discussion: Untreated scleromyxedema results in diffuse pruritic papules/plaques, congestive heart failure, restrictive lung disease, and encephalopathy. Selection among treatment options remains difficult due to incomplete understanding and lack of randomized controlled trials (1). High-dose immunoglobulins are considered the treatment of choice, followed by thalidomide and systemic glucocorticosteroids (2). This case provides support of bortezomib and dexamethasone for refractory scleromyxedema. Our patient has remained in remission for three years, the longest documented to date. Notably, our case achieved remission with fewer cycles compared to other cases, with prior studies citing a minimum of four cycles and a maximum of eight cycles (1,3).

Dermatology
Silverberg JI, Deleuran M, **Gold LS**, Bunick CG, Hijnen DJ, Calimlim BM, Teixeira HD, Platt AM, Grada A, Hu X, and Gooderham M. 42262 Sustained Improvement Over 52 Weeks in Patient-Reported Itch, Symptoms, and Quality of Life With Upadacitinib in Patients With Atopic Dermatitis: Results From Phase 3 Studies (Measure Up 1, Measure Up 2, and AD Up). *J Am Acad Dermatol* 2023; 89(3):AB90. Full Text

Atopic dermatitis (AD) is a debilitating skin disease that impairs quality of life (QoL). We assessed the long-term effect of once daily oral upadacitinib, a selective Janus kinase-1 inhibitor, on patient-reported outcomes through week 52 in the blinded extension periods of Measure Up 1 (NCT03569293), Measure Up 2 (NCT03607422), and AD Up (NCT03568318) using observed cases analysis. Patients were randomized to upadacitinib 15 mg, upadacitinib 30 mg, or placebo at baseline. At 16 weeks, patients who received placebo were rerandomized to upadacitinib 15 or 30 mg. Patient-reported itch (Worst Pruritus Numerical Rating Scale); skin pain, and symptom severity (AD Symptom Scale); sleep, daily activities, and emotional state (AD Impact Scale); symptom frequency (Patient-Oriented Eczema Measure); and QoL (Dermatology Life Quality Index) were assessed. 2584 randomized patients were included. As early as week 2, a greater proportion of patients receiving upadacitinib achieved clinically relevant itch, sleep, and QoL responses versus placebo. Response rates improved through week 8, with markedly higher response rates with upadacitinib 15 mg (itch: 52.5%-63.7%; sleep: 57.7%-66.7%; QoL: 84.6%-88.1%) and 30 mg (itch: 70.3%-75.4%; sleep: 68.0%-78.5%; QoL: 88.5%-92.5%) versus placebo (itch: 17.4%-19.6%; sleep: 22.1%-26.9%; QoL: 54.1%-65.3%). Improvements were maintained through week 52. Similar patterns were observed for other outcomes. Response rates 4 weeks after switching from placebo to upadacitinib reached similar levels as patients originally randomized to upadacitinib. These results support rapid and sustained efficacy of once daily oral upadacitinib in reducing itch and other AD symptoms and improving sleep and QoL of patients with AD.

Neurosurgery

Jimenez-Shahed J, York M, Kirk J, Berg A, **Schwalb J**, Siddiqui M, and McInerney J. FEASIBILITY OF LARGE-SCALE SYSTEMATIC DATA COLLECTION IN A QUALITY IMPROVEMENT REGISTRY OF DEEP BRAIN STIMULATION IN PARKINSON'S DISEASE. *Parkinsonism Relat Disord* 2023; 113:21-21. Full Text

[Jimenez-Shahed, J.] Icahn Sch Med Mt Sinai, New York, NY USA. [York, M.] Baylor Coll Med, Houston, TX USA. [Berg, A.; McInerney, J.] Penn State Univ, Hershey, PA USA. [Schwalb, J.] Henry Ford Hlth Syst, Detroit, MI USA. [Siddiqui, M.] Wake Forest Sch Med, Winston Salem, NC USA. Pennsylvania Commonwealth System of Higher Education (PCSHE); Pennsylvania State University; Penn State Health; Henry Ford Health System; Henry Ford Hospital; Wake Forest University

Radiation Oncology

Martell K, Fang B, McGeachy P, Meyer T, Husain S, and **Thind K**. Acute Toxicity Following Salvage High-Dose-Rate Brachytherapy for Intraprostatic Recurrence of Prostate Adenocarcinoma. *Brachytherapy* 2023; 22(5):S96-S97. Full Text

Purpose: Isolated intraprostatic recurrence of prostate adenocarcinoma post radiotherapy presents a clinically challenging situation as surgical salvage options are associated with high morbidity. Brachytherapy can be used in these cases but supportive data are limited. The present study aims to present the acute toxicity results from patients who received salvage high-dose-rate prostate brachytherapy (sHDR-BT) for intraprostatic recurrence of prostate adenocarcinoma. Materials and Methods: Fourteen consecutive patients treated with sHDR-BT between 2019 and 2022 were prospectively evaluated. To be considered for sHDR-BT, patients were required to have had received curative intent prostate radiotherapy previously and have biochemical failure. Patients were evaluated with bone scan and CT imaging of the chest abdomen and pelvis or PSMA-PET imaging. All patients had MRI of the prostate and trans-rectal ultrasound (US) guided biopsy proven confirmation of intraprostatic recurrence of disease. For patients who received prior BT, sHDR-BT was standardized with prescribed dose of 27Gy in 2 fractions to prostatic regions with confirmed disease on MR or biopsy. For patients had no history of prior BT, sHDR-BT was standardized with a prescribed dose of 21Gy in 2 fractions to the entire prostate with integrated boost irradiation of 27Gy in 2 fractions to the prostatic zones with confirmed disease on MR or biopsy. All plans were designed using trans-rectally acquired US image sets in Oncentra Prostate®. Post-treatment monitoring consisted of either in person or telephone (due to COVID-19) evaluation with AUA and CTCAE symptom assessments at 1, 3 and 12 months post treatment and yearly thereafter. Descriptive statistics were used to describe outcomes and the Mann-Whitney-Wilcoxon or Fisher-Freeman-Halton test used for comparisons. Results: Median (inter-quartile-range) age prior to salvage treatment was 72 (67-76) years for the cohort. Seven (50%) patients had

received external beam radiotherapy (EBRT) monotherapy (74-78Gy) as initial treatment for prostate cancer. One (7%) received EBRT (46Gy) + low-dose-rate BT (LDR-BT) (110Gy) and six (43%) received LDR-BT (144Gy) monotherapy as initial treatment. Four (29%) had received elective nodal irradiation (46Gy) with EBRT. Median time from initial radiotherapy to biopsy confirmation of recurrent disease was 77 (54-111) months. At baseline prior to sHDR-BT, 7 (50%) patient had significant lower urinary tract symptoms. Median AUA score was 8 (3-20) prior to sHDR-BT [Table 1]. 3 (21%) patients reported irregular bowel function and 2 (14%) reported hematochezia prior to sHDR-BT. At first fraction of sHDR-BT rectal D100cc was 8 (6-9)Gy, urethra D10% was 12 (11-15)Gy, urethra Dmax was 15 (13-16)Gy. At second fraction of sHDR-BT rectal D100cc was 8 (7-9)Gy, urethra D10% was 12 (12-14)Gy and urethra Dmax was 13 (12-16)Gy. At 1-month post treatment, median AUA score was 13 (18-21; p=0.48). On review of CTCAE scoring, at 1-month, there were no cases of grade 2+ bowel or rectal toxicity and no cases of grade 3+ urinary toxicity. Reported grade 2 urinary toxicities included 8 (57%) cases of bladder spasms, 2 (14%) cases of incontinence, 1 (7%) urinary obstruction and 2 (14%) reports of urinary urgency. Conclusions: This study adds to the existing literature in confirming the acute toxicity profile of sHDR-BT is acceptable even without intraoperative MR guidance or software based MR-US image registration. Further study is ongoing to determine long-term efficacy and toxicity of treatment.

Surgery

Dobesh K, **Dandu C**, **Yorks A**, **Onofrey K**, **Weaver M**, **Nypaver T**, and **Kabbani L**. Single-center Experience With Jeti Hydrodynamic Thrombectomy System for Arterial Occlusions of the Extremities. *J Vasc Surg* 2023; 78(3):e49-e50. Full Text

Objective: Percutaneous aspiration thrombectomy is a new modality for treating patients with acute limb ischemia. We report our experience and outcomes using the JETi hydrodynamic thrombectomy system (Abbott Vascular, Abbott Park, IL) to treat acute arterial occlusions of the extremities. Methods: This is a single-center retrospective review of acute occlusions of peripheral arteries/grafts treated with the JETi from September 2020 to December 2022. JETi was used either as primary intervention or as an adjunct to treat distal vessel thrombus after proximal open thrombectomy. The primary outcome for success was defined as >50% luminal opening post-intervention. Indications, limb salvage, and major adverse events were reviewed. Results: The JETi was used in 59 procedures (56 acute lower extremity ischemia [ALEI], 3 acute upper extremity ischemia) to treat 124 arteries in 57 patients. Mean age was 62 years (range, 29-95 years) and 49% were male. The mean duration of symptoms before hospitalization was 4.8 days (range, 0 hours to 21 days) for ALEI. The primary outcome was achieved in 102 of 124 arteries by JETi alone (83%). Additional modalities including open thrombectomy, angioplasty, and stenting were used in five arteries to achieve the primary outcome. Seventeen arteries failed to achieve primary outcome with JETi with or without an adjunct. Reasons for failure were attributed to small artery size and chronic nature of the clot. Complete luminal patency with JETi thrombectomy alone was achieved in 52 arteries (42%). Additionally, 55 arteries underwent angioplasty/stenting to restore complete luminal patency, which was successfully achieved in 49 vessels (89%) (Table). Complications included distal embolization (n = 5), access site hematoma (n = 3), and acute kidney injury (n = 8). There was a single 30-day mortality. Six patients required major limb amputations within 30 days, two after unsuccessful recanalization and one each for severe gangrene despite restoration of in-line flow, reocclusion of a distal bypass graft, recurrent ALEI postoperative day 15 with nonviable muscle on exploration, and a delayed compartment syndrome diagnosis. Conclusions: Success of the JETi to remove the targeted clot was 83%. The JETi system is an efficacious and safe tool for use in the treatment of acute artery occlusion.