May 28th, 2026

ANNUAL RESEARCH DAY 2026

Boston Medical Center Brighton

Boston Medical Center HEALTH SYSTEM

Boston University Aram V. Chobanian & Edward Avedisian School of Medicine

WELCOME TO ANNUAL RESEARCH DAY 2026

Dear Research Day Attendees,

On behalf of the Research Day Planning Committee, welcome to the Annual Research Day of Boston Medical Center Brighton, a celebration of scientific and scholarly work conducted by interns, residents, fellows, and trainess enrolled in Boston Medical Center Brighton and South Graduate Medical Education training programs and carried out in collaboration with faculty members.

A full schedule of events and all abstracts submitted can be found in the following pages. We are once again impressed by our trainees' interest in this event in 2026. A total of 45 abstracts were received: 26 original investigations, 8 quality improvement reports, and 11 clinical vignettes/case reports. We are so appreciative of the time and effort that our judges from Boston Medical Center Brighton and Boston Medical Center Main have put into scoring these abstracts. During the course of the morning, you will have the opportunity to listen to oral presentations of the top scoring efforts.

In many ways, the study of Psychiatry offers a unique vantage point within medicine, sitting at the vital intersection of numerous clinical disciplines, and there has never been a more exciting time to pursue a career in psychiatric research. We are so fortunate to have our colleague from Boston Medical Center Main, Dr. Hannah Brown speak with us about her research career and particularly her work studying the integration and implementation of Psychiatry and Family Medicine, a collaborative approach essential to refining and elevating outpatient care.

It is our hope that this day will not only give us the opportunity to celebrate the ongoing scientific and scholarly work but also promote research collaborations among trainees and faculty within and across departments. Thank you very much for being with us today. Enjoy the day!

Sincerely,

Jason Strauss MD
Chair, Research Day Committee
Department Chief of Psychiatry, Boston Medical Center Brighton

PROGRAM

7:00 - 7:30 a.m. **Welcome & Introduction**

Jason Strauss, MD
Chair of Research Day Committee

7:30 - 8:10 a.m. **Keynote Speaker**

Hannah Brown, MD
Vice Chair of Research for the Department of Psychiatry
Associate Clinical Professor of Psychiatry at the Boston University Chobanian and Avedisian School of Medicine

8:15 - 9:15 a.m. **Oral Presentations**

Original Investigation (1st Place): 8:15 – 8:25 a.m.

Ahmed Mahmoud, MD
Comparative Effectiveness of GLP-1 Receptor Agonists Versus Bariatric Surgery in Patients with Hypertrophic Cardiomyopathy and Obesity

Original Investigation (2nd Place): 8:30 – 8:40 a.m.

Santani Skarkas, MD
Comparative Cardiovascular Outcomes of IL-6 Inhibitors Versus Rituximab in Rheumatoid Arthritis: A Claims-Based Observational Study

Original Investigation (3rd Place): 8:45 – 8:55 a.m.

Adham Ramadan, MD
Outcomes of Glucagon-Like Peptide-1 Receptor Agonists Versus Sodium-Glucose

Quality Improvement Report (1st Place): 9:00 – 9:05 a.m.

Zaid Qadadeh, MD
Quality Improvement Initiative to Improve LDL-C Screening and Antilipemic Therapy Escalation in ACS Patients

Clinical Vignette/Case Report (1st Place): 9:10 – 9:15 a.m.

Ahmed Abouelazaem, MD
Chasing TSH: The Importance of a Stepwise Approach in Apparent Levothyroxine Failure

9:15 - 12:00 p.m. **Poster Presentations**

Keynote Speaker

Hannah E. Brown, MD

Dr. Hannah E. Brown, MD, is a highly accomplished psychiatrist at Boston Medical Center, where she serves as the Vice Chair of Research for the Department of Psychiatry and an Associate Clinical Professor of Psychiatry at the Boston University Chobanian and Avedisian School of Medicine. After earning her medical degree from Harvard Medical School, she completed her adult psychiatry residency and a specialized schizophrenia fellowship at Massachusetts General Hospital.

At BMC, Dr. Brown directs the Wellness and Recovery After Psychosis (WRAP) clinical and research programs. Her exceptional work and dedication to the field have earned her notable accolades, including the 2021 Excellence in Mentorship Award from BMC's Department of Psychiatry and induction into the Boston University Medical Group Clinical Excellence Society, alongside the prestigious American Psychiatric Association Kempf Fund Award for her research on schizophrenia.

Overall, Dr. Brown's mission at BMC centers on revolutionizing the treatment of psychotic disorders and closing the treatment gap for individuals living with serious mental illness. Through initiatives like the Advancing Coordinated Care through Epidemiologic Studies in Schizophrenia (ACCESS) program, her research leverages large-scale clinical data to understand how individual and neighborhood-level factors impact patient health. By integrating clinical care with cutting edge translational research spanning nutrition education partnerships, community health worker integration, and clinical trials for novel therapeutics; Dr. Brown strives to build a more humanistic, personalized, and equitable framework that reduces systemic barriers to care and vastly improves life longevity and outcomes for patients and their families.

Judges Panel

Dr. Bertrand Jaber, MD, MS, FASN, FNKF

Dr. Bertand Jaber is the Chair of Medicine and a board-certified internist and nephrologist at Boston Medical Center - Brighton. He serves as Chair of the Clinical Competency Committee, and Core Faculty for the Internal Medicine Residency Program. Dr. Jaber received his medical degree from St. Joseph University Faculty of Medicine, Beirut, Lebanon, and completed a residency in Internal Medicine at Carney Hospital, Boston, MA, followed by a clinical and research fellowship in nephrology at Tufts New England Medical Center, Boston, MA. He also holds a Master of Science in Clinical Research from the Graduate School of Biomedical Sciences at Tufts University.

Dr. Jaber has had a longstanding commitment to medical education. He has been the recipient of numerous teaching awards and citations from medical students and residents, including the St. Luke's Award in recognition of his dedication and excellence to the education of residents. Dr. Jaber is a member of the Intern Selection Committee and directs the Quality Improvement Curriculum of the residency program. His research interests and original accomplishments have covered several important areas within the field of nephrology. He has also made contributions to the field of evidence-based medicine through the conduct of meta-analyses on the prevention and treatment of kidney diseases. He has mentored and supervised scores of trainees through the conduct of quality improvement initiatives and research projects.

Dr. Megan Bair-Merritt, MD, MSCE

Dr. Megan Bair-Merritt is Vice President and Chief Scientific Officer at Boston Medical Center Health System. She is responsible for developing and implementing BMCHS' research-related strategic vision and provides oversight of research governance across the institution. In addition, Dr. Bair-Merritt is a professor of pediatrics and MPI of the Boston University Clinical and Translational Science Institute.

Dr. Bair-Merritt received a Doctor of Medicine degree from the University of North Carolina-Chapel Hill, and a Masters of Science in Clinical Epidemiology from the University of Pennsylvania. Her publications have been cited in policy pieces and clinical guidelines including the National Academy of Science, Engineering and Medicine's consensus report Clinical Preventive Services for Women: Closing the Gaps, the World Health Organization's Guidelines for Prevention and Clinical Intervention for Female Survivors of Intimate Partner Violence, the United States Preventive Services Task Force's recommendation for Intimate Partner Violence and Abuse of Elderly and Vulnerable Adults: Screening, as well as the American Academy of Pediatrics guidelines on intimate partner violence screening in the pediatric setting. She has been invited to present about intimate partner violence homicide at the National Academy of Science, Engineering and Medicine's Workshop on Firearm Injuries and Death. She also served as an invited member of a Task Force for the State of Massachusetts focused on implementing surveys around sexual misconduct on college campuses.

Dr. Helen Kyomen, MD, MS

Dr. Helen Kyomen is currently the Chair of the Committee on Aging of the Group for Advancement of Psychiatry, a USA think tank that serves to influence and advance modern psychiatric theory and practice. She is Assistant Professor at Boston University Chobanian and Avedisian School of Medicine, Adjunct Clinical Assistant Professor at Tufts University School of Medicine and Lecturer on Psychiatry, Part-time at Harvard Medical School. She received her geriatric psychiatry fellowship and NIA supported clinical research training at McLean Hospital, the Harvard Medical School Division on Aging and the Harvard School of Public Health (epidemiology and biostatistics). She teaches medical and physician assistant students, residents, and fellows who are studying in the greater Boston area. Her mentees have contributed to the field of geriatric psychiatry by training in geriatric psychiatry fellowships, providing ongoing clinical care to older adults, teaching other students and clinicians as faculty of respected academic centers, and participating in research activities leading to presentation at national meetings and publication in peer reviewed journals. Her main clinical and research interests include affective and behavioral disturbances in MNCD patients and health and well-being in older adults in diverse settings. She has held a number of leadership positions to help develop clinical and academic programs and contribute to performance improvement on local and national levels.

Dr. Eduardo Vega, MD

Dr. Eduardo Vega is a Hepato-Bilio-Pancreatic surgeon in the Department of Surgery at BMC Brighton and Assistant Professor of Surgery BUSM. After completing residency in general surgery at Hospital Sotero del Rio, Santiago, Chile, Dr Vega served as Postdoctoral Fellow in the Department of Surgical Oncology at The University of Texas MD Anderson Cancer Center from 2017 to 2019. Later, Dr Vega moved to Boston, Massachusetts to complete a fellowship in Minimally Invasive Hepato-Pancreato-Biliary (HPB) Surgery at Saint Elizabeth's Medical Center of Tufts University. This experience lead to multiple publications that found innovative prognostic solutions for gallbladder cancer and pancreatic cancer which are being applied to clinical practice at MD Anderson and in Chile today.

Dr. Vega's current research focuses on novel techniques/ technologies to treat complex liver and pancreas cancer. He has designed multiple innovative techniques for HPB disease that use 3D reconstruction software. This work has produced multiple publications in Annals Surgical Oncology and other peer-review journals. This reciprocal relationship between clinical surgery and research is a primary focus for Dr. Vega's with an ultimate goal of applying innovative solutions to healthcare needs, especially in geographic areas with limited health resources.

Dr. Sharon Bassi, MD

Dr. Sharon Bassi, MD, brings an exceptional level of specialized expertise in restorative care and long-term functional recovery as the Director of the Spine Center at Boston Medical Center Brighton. As a dual board-certified physiatrist in Physical Medicine & Rehabilitation and Pain Medicine, Dr. Bassi serves as the Medical Director of Spine Care at BMC Brighton and holds an academic appointment as an Adjunct Clinical Assistant Professor. Having completed her rigorous residency training at Spaulding Rehabilitation Hospital followed by an advanced Pain Medicine fellowship at UCLA, her extensive background spans complex neuromuscular evaluations, interventional pain diagnostics, and multidisciplinary spine care.

Dr. Bassi's deep commitment to clinical excellence and patient-centered outcomes brings the methodological soundness, innovation, and direct clinical utility of this year's investigative abstracts, further inspiring the next generation of clinical researchers at the institution.

Dr. Frederick L. Ruberg, MD

Dr. Frederick (Rick) L. Ruberg, MD is Chief of Cardiovascular Medicine at Boston Medical Center (BMC). Dr. Ruberg is also the Thomas J. Ryan Professor of Cardiovascular Medicine and Section Chief of Cardiovascular Medicine at Boston University Chobanian & Avedisian School of Medicine.

His clinical and research expertise primarily involves cardiac imaging (echocardiography and cardiac magnetic resonance imaging) and infiltrative heart disease focused on improving the recognition and care of patients with cardiac amyloidosis. An active clinical cardiologist at the BU/BMC Amyloidosis Center, he has also contributed and co-directed numerous collaborative clinical guidelines initiatives, including in 2023 the ACC Expert Consensus Decision Pathway document on The Comprehensive Multidisciplinary Care of Patient with Cardiac Amyloidosis.

Dr. Michael Fischer, MD, MS

Dr.Michael Fischer, MD, MS is a general internist, epidemiologist, and health services researcher. He is Chief of the Section of General Internal Medicine at Boston Medical Center, where he also serves as the Director of Clinical and Translation Research. He is a Professor of Medicine at Boston University Chobanian & Avedisian School of Medicine. He practices primary care internal medicine at BMC's safety-net clinic and supervises residents in both the outpatient and inpatient settings. He has extensive experience in designing and evaluating interventions to improve medication use and other elements of clinical care.

His research has assessed Medicaid policy, prescription drug reimbursement, electronic prescribing, medication adherence, and academic detailing. He is the co-PI of Boston Health Equity & community-Aligned Learning Health System (Boston HEALHS), a P30 grant from AHRQ and PCORI that supports training and infrastructure development to enhance LHS research with an equity focus. Dr. Fischer has mentored students, trainees, and faculty and many of his mentees now hold prominent leadership positions in academic departments, government, and hospital administration.

Dr. Benjamin Linas, MD, MPH

Dr. Benjamin Linas is a Professor of Medicine and Epidemiology at the BU School of Medicine. He employs methods of health economics, data science, and simulation modeling to investigate the intersection of substance use disorders and infectious diseases. He is also leading efforts to engage community members and renew trust in science and improve the generalizability of clinical research. He is the Principal Investigator of the Massachusetts Community Engagement Alliance of the NIH and Medical Director of the Boston Medical Center Clinical research network.

Dr. Manish Sagar, MD

Dr. Manish Sagar, MD, is a board-certified internal medicine and infectious disease physician at Boston Medical Center (BMC) and a professor at Boston University Chobanian & Avedisian School of Medicine. After receiving his medical degree, he completed an internal medicine residency at Johns Hopkins University and an infectious disease fellowship at the University of Washington. His research focuses on HIV-1 transmission and antibodies.

Dr. Sagar has served on numerous committees including NIH study sections and the Doris Duke Charitable Foundation Early Career Development Award Review Committee. He is also an active member of the Infectious Diseases Society of America (IDSA).

Dr. David J. Salant, MD

Dr. David J. Salant is Professor of Medicine and Vice-Chair for Research. He received his medical degree from University of the Witwatersrand in South Africa and completed his clinical training at the Johannesburg Hospital. He received his research training at Boston University with Dr. William G. Couser and joined BU's nephrology faculty in 1979.

Dr. Salant is an internationally renowned physician-scientist and an acclaimed educator. His research primarily explores the immune basis for glomerular diseases and the mechanisms of podocyte injury. He was among the first to identify podocytes as the primary target of injury in antibody-mediated glomerular diseases. In a landmark New England Journal of Medicine paper in 2009, Drs. Salant, Beck and colleagues described their discovery of the target antigen in membranous nephropathy and showed that a high proportion of MN patients have circulating autoantibodies to the antigen on human podocytes. Dr. Salant is a past chairman of the ABIM Nephrology Board.

Dedication to Dr. Alan B. Ashare

Alan B. Ashare, MD

The Annual Research Day honors the legacy of Dr. Alan B. Ashare who served with distinction as Chair of the IRB at St. Elizabeth's Medical Center for 30 years, from 1992 to 2022. Dr. Alan Ashare was Chief of Nuclear Medicine and was a devoted member of the medical staff. He made important contributions to the Department of Radiology, the IRB, and the hospital. Outside of the workplace, Dr Ashare was known for his passionate advocacy for safety in youth ice hockey. At the state and national level, he served as member of the Board of Directors for Massachusetts Hockey. He was responsible for the creation of the "Head Up, Don't Duck" program to educate ice hockey players about neck and spine safety. This educational program was adopted nationally. He was a long-time member and co-chair of the Safety and Protective Equipment Committee of USA Hockey.

In his formal remarks at the 2024 Annual Research Day, Dr. Stuart Schneller, Chair of the IRB, stated that "Dr. Ashare strongly believed this hospital should do research and he supported this important endeavor for many physicians". The Annual Research Day is conducted in honor of Dr. Ashare and rightfully recognizes his contribution to the research program at Boston Medical Center Brighton, formerly known as St. Elizabeth's Medical Center.

First Authors of Winning Abstracts

Original Investigation

1st Place ..... Ahmed Mahmoud, MD
Comparative Effectiveness of GLP-1 Receptor Agonists Versus Bariatric Surgery in Patients with Hypertrophic Cardiomyopathy and Obesity

2nd Place ..... Santani Skarkas, MD
Comparative Cardiovascular Outcomes of IL-6 Inhibitors Versus Rituximab in Rheumatoid Arthritis: A Claims-Based Observational Study

3rd Place ..... Adham Ramadan, MD
Outcomes of Glucagon-Like Peptide-1 Receptor Agonists Versus Sodium-Glucose Cotransporter-2 Inhibitors and Their Combination After Catheter Ablation for Atrial Fibrillation

Quality Improvement Report

1st Place ..... Zaid Qadadeh, MD
Quality Improvement Initiative to Improve LDL-C Screening and Antilipemic Therapy Escalation in ACS Patients

2nd Place ..... Hamed Hussain, MD
Improving Compliance Rate with A Newly Established Protocol for Evaluation and Management of Severe Hyponatremia

3rd Place ..... John Moyer, MD
Improving Depression Screening in a Resident Primary Care Clinic Through a Standardized PHQ-2/PHQ-9 Workflow: A Quality Improvement Study

Clinical Vignette

1st Place ..... Ahmed Abouelazaem, MD
Chasing TSH: The Importance of a Stepwise Approach in Apparent Levothyroxine Failure

2nd Place ..... Sinju Joseph, DO
A Case of Acute Hemolytic Anemia with Methemoglobinemia and Pernicious Anemia After Chronic Amyl Nitrite Use

3rd Place ..... Ayodeji Johnson, MD
Rapid Normalization of AFP Following Tremelimumab Plus Durvalumab in BCLC Stage C Hepatocellular Carcinoma with Intrathoracic IVC Tumor Thrombus

First Authors of Honorable Mentions Abstracts

Original Investigation

Muhammad Musani, MD
Electroconvulsive Therapy in Catatonia: A Systematic Review of Early Versus Delayed Intervention

Ahmed Mahmoud, MD
Risk of rhabdomyolysis with concomitant use of statins and SGLT2 inhibitors: A population-based cohort study

Quality Improvement Report

Obinna Ofoche, MD
Standardized ED Atrial Fibrillation Pathway: A Quality Improvement Initiative

Ibrahim Kamel, MD
A Quality Improvement Initiative to Enhance Resident Engagement in Ambulatory Education

Mary Luck, PharmD
Antimicrobial Stewardship in Sepsis: Optimizing Empiric Antipseudomonal and Anti-Methicillin-Resistant Staphylococcus aureus Therapy

Clinical Vignette

Hamed Hussain, MD
Genitourinary Tuberculosis Complicated by Acute Respiratory Distress Syndrome

Ranjit Sah, MD
Chest Pain Due to Diffuse Coronary Cameral Fistulas Draining into the Left Ventricle and Mimicking Acute Coronary Syndrome

Nader Pahlevan, MD
Wernicke Encephalopathy in a Young Malnourished Woman: A Diagnostic Challenge

Winner: 1st Place

Comparative Effectiveness of GLP-1 Receptor Agonists Versus Bariatric Surgery in Patients with Hypertrophic Cardiomyopathy and Obesity

Ahmed K. Mahmoud MD, Amal Awad MD, Hesham Sheashaa MD, Ibrahim Kamel MD, Adham Ramadan MD, Juan Farina MD, Ramzi Ibrahim MD, Mahmoud Abdelnabi MBBCh, MS, Steven Lester MD, Rohit Mital MD, Said Alsidawi MD, Justin Shipman MD, Richard Patten MD, Chadi Ayoub MBBS, PhD, Reza Arsanjani MD

Background

Obesity is associated with poorer outcomes in hypertrophic cardiomyopathy (HCM). Both bariatric surgery (BS) and glucagon-like peptide-1 receptor agonists (GLP-1 RA) improve weight and cardiometabolic risk, but their comparative effectiveness in HCM is unknown.

Methods

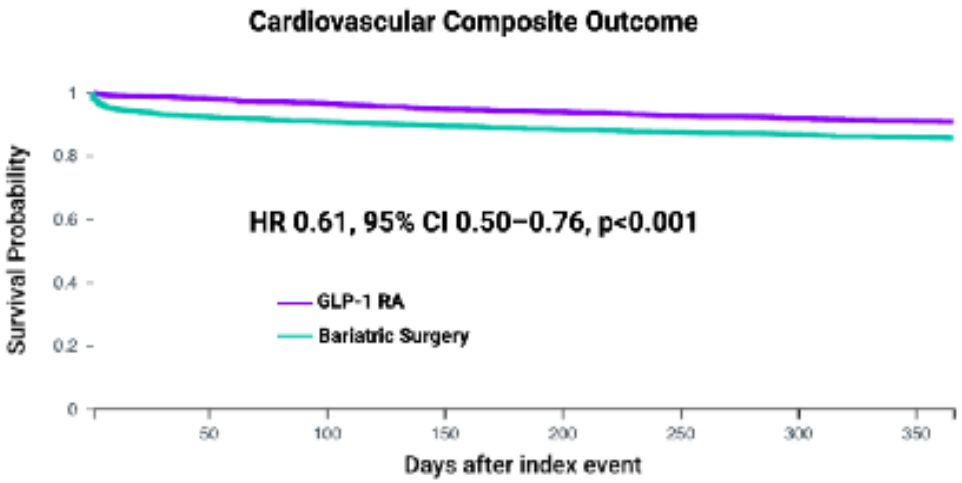
Using the TriNetX Research Network, we identified adults with HCM and BMI ≥30 kg/m² prior to January 2024. Cohorts were defined as I) GLP-1 RA users and never had BS and II) BS patients and never received GLP-1 RA. Propensity score matching (1:1) was performed to balance demographics, comorbidities, and medications. Outcomes over 12 months included all-cause mortality, acute heart failure hospitalization, arrhythmias, cardiac arrest, change in BMI, and cardiovascular symptoms. Hazard ratios (HR) with 95% confidence intervals (CI) were estimated using Cox models.

Results

Of 9,607 patients, 1,609 in each cohort were well matched (mean age 55 years, 71% female, BMI 40.5 kg/m²). GLP-1 RA therapy was associated with lower mortality compared to BS (0.9% vs. 1.9%; HR 0.48, 95% CI 0.26–0.89, p=0.01) and reduced heart failure hospitalization (8.2% vs. 12.9%; HR 0.61, 95% CI 0.49–0.76, p<0.001). GLP-1 RA was also associated with reduced composite cardiovascular outcomes (9.2% vs. 14.3%; HR 0.61, 95% CI 0.50–0.76, p<0.001). Rates of atrial fibrillation, ventricular arrhythmias, cardiac arrest, and symptom burden were similar. BMI reduction was greater after BS (–4.0 vs –2.6 kg/m², p<0.001).

Conclusions

In obese patients with HCM, GLP-1 RA therapy was associated with improved survival and fewer heart failure events compared with BS or, suggesting their effectiveness in improving cardiac outcomes beyond weight reduction alone.


Cardiovascular Composite Outcome
Survival Probability
1
0.8
0.6
0.4
0.2
0
HR 0.61, 95% CI 0.50–0.76, p<0.001
GLP-1 RA
Bariatric Surgery
50
100
150
200
250
300
350
Days after index event

Winner: 2nd Place

Comparative Cardiovascular Outcomes of IL-6 Inhibitors Versus Rituximab in Rheumatoid Arthritis: A Claims-Based Observational Study

Satani G Sharkas 1, Huseyin Berk Degirmenci 2, Saeed Abughazaleh3, Maureen Dubreuil2,4

1 Boston Medical Center – Brighton, Brighton, MA, 2 Section of Rheumatology, Boston University School of Medicine, Boston, MA, 3 Department of Cardiovascular Medicine, University of Massachusetts-Baystate, Springfield, MA, 4 VA Boston Healthcare System.

Background

Interleukin-6 receptor inhibitors (IL-6i), tocilizumab and sarilumab, are FDA-approved therapies for Rheumatoid Arthritis (RA). Beyond their efficacy in controlling systemic inflammation, growing evidence suggests that IL-6 inhibition may confer cardioprotective effects. This study investigates the long-term cardiovascular outcomes associated with IL-6i in RA patients, comparing IL-6 inhibitors with rituximab and evaluating differences between individual IL-6 inhibitor agents.

Methods

We conducted an observational cohort study using the TriNetX Linked Network (2010–2025) including adults with RA with prior Tumor Necrosis Factor inhibitor (TNFi) and ≥2 prescriptions for a drug of interest ≥6 months apart. Comparisons were: (1) IL-6 inhibitors (sarilumab, tocilizumab) versus rituximab, and (2) tocilizumab versus sarilumab. Patients receiving both IL-6 inhibitors simultaneously or a non-FDA-approved IL-6 blocker (e.g., siltuximab) were excluded. Outcomes included all-cause mortality, myocardial infarction (MI), stroke, heart failure (HF), and venous thromboembolism (VTE) over 5 years. We calculated propensity scores using demographics, cardiovascular risk factors, inflammatory markers, and prior TNFi exposure, and used scores to match exposed individuals 1:1 with comparators [Table 1]. Cox models estimated hazard ratios (HRs) for mortality and cardiovascular outcomes individually. All analyses were conducted using the TriNetX platform.

Results

After matching, 3,412 RA patients per group were included for IL-6i versus rituximab and 361 per group for sarilumab versus tocilizumab. Compared to rituximab, IL-6i was associated with lower hazards of mortality (HR 0.56, 95% CI 0.45–0.69), stroke (HR 0.73, 95% CI 0.57–0.93), and HF risk (HR 0.71, 95% CI 0.60–0.84), with no significant difference in MI or VTE. Amongst IL-6 inhibitors, sarilumab was associated with lower hazards of MI compared to tocilizumab (HR 0.30, 95% CI 0.11-0.83), but no significant differences identified for other outcomes [Figure 1].

Conclusions

Among adults with RA who had previously been treated with a TNFi, IL-6i use was associated with lower of all-cause mortality, stroke, and heart failure compared to rituximab. A lower risk of myocardial infarction was observed with sarilumab compared to tocilizumab. These findings support a potential cardiovascular benefit of IL-6i and highlight the need for larger studies to further distinguish the cardiovascular outcomes with IL-6i agents. Such evidence could inform personalized treatment decisions based on cardiovascular risk factors.

Limitations

Key limitations include the potential residual confounding despite propensity matching, especially from unmeasured factors like RA disease activity, adherence, and prescribing patterns. Some subgroup analyses were underpowered due to small sample sizes, and the inability to perform competing risk analyses for death restricts interpretation of cause-specific mortality.

Characteristic	IL-6i (N=3,412)	Rituximab (N=3,412)	P value	Tocilizumab (N=361)	Sarilumab (N=361)	P value
Age, years	58.9 ± 14.9	58.9 ± 14.5	0.965	58.3 ± 15.5	58.5 ± 12.0	0.876
Female, n (%)	2,781 (81.5)	2,774 (81.3)	0.828	308 (85.3)	306 (84.8)	0.835
White race, n (%)	1,653 (48.4)	1,659 (48.6)	0.884	188 (52.1)	182 (50.4)	0.655
Black race, n (%)	374 (11.0)	411 (12.0)	0.160	29 (8.0)	32 (8.9)	0.688
Hispanic ethnicity, n (%)	371 (10.9)	367 (10.8)	0.876	46 (12.7)	45 (12.5)	0.911
Type 2 Diabetes	827 (24.2)	837 (24.5)	0.778	122 (33.8)	109 (30.2)	0.300
Chronic Kidney Disease	345 (10.1)	353 (10.3)	0.749	43 (11.9)	40 (11.1)	0.726
Hypertension	1,862 (54.6)	1,890 (55.4)	0.496	235 (65.1)	233 (64.5)	0.876
Ischemic Heart Disease	603 (17.7)	615 (18.0)	0.704	69 (19.1)	69 (19.1)	1.000
Hyperlipidemia	1,308 (38.3)	1,319 (38.7)	0.784	179 (49.6)	179 (49.6)	1.000
Nicotine Dependence	596 (17.5)	605 (17.7)	0.775	82 (22.7)	89 (24.7)	0.540
Obesity	1,194 (35.0)	1,215 (35.6)	0.595	169 (46.8)	172 (47.6)	0.823
Prior Stroke	151 (4.4)	155 (4.5)	0.815	17 (4.7)	17 (4.7)	1.000
Antilipemic Agents	1,018 (29.8)	1,059 (31.0)	0.281	138 (38.2)	153 (42.4)	0.255
Antiplatelet Agents	522 (15.3)	533 (15.6)	0.713	64 (17.7)	60 (16.6)	0.693
CRP, mg/L	17.5 ± 28.3	18.6 ± 32.4	0.437	18.9 ± 28.6	11.4 ± 18.6	0.051
ESR, mm/hr	29.1 ± 26.2	33.6 ± 28.9	<0.001	31.3 ± 24.9	29.1 ± 25.6	0.551
LDL, mg/dL	101.3 ± 38.2	101.9 ± 42.0	0.750	111.7 ± 37.6	107.3 ± 40.1	0.469
BMI	30.0 ± 7.5	29.7 ± 7.3	0.270	30.3 ± 7.4	31.4 ± 7.2	0.169

Table 1. Baseline Characteristics of Matched RA Patients: IL6i vs Rituximab and Tocilizumab vs Sarilumab Cohorts (Post-Matching)

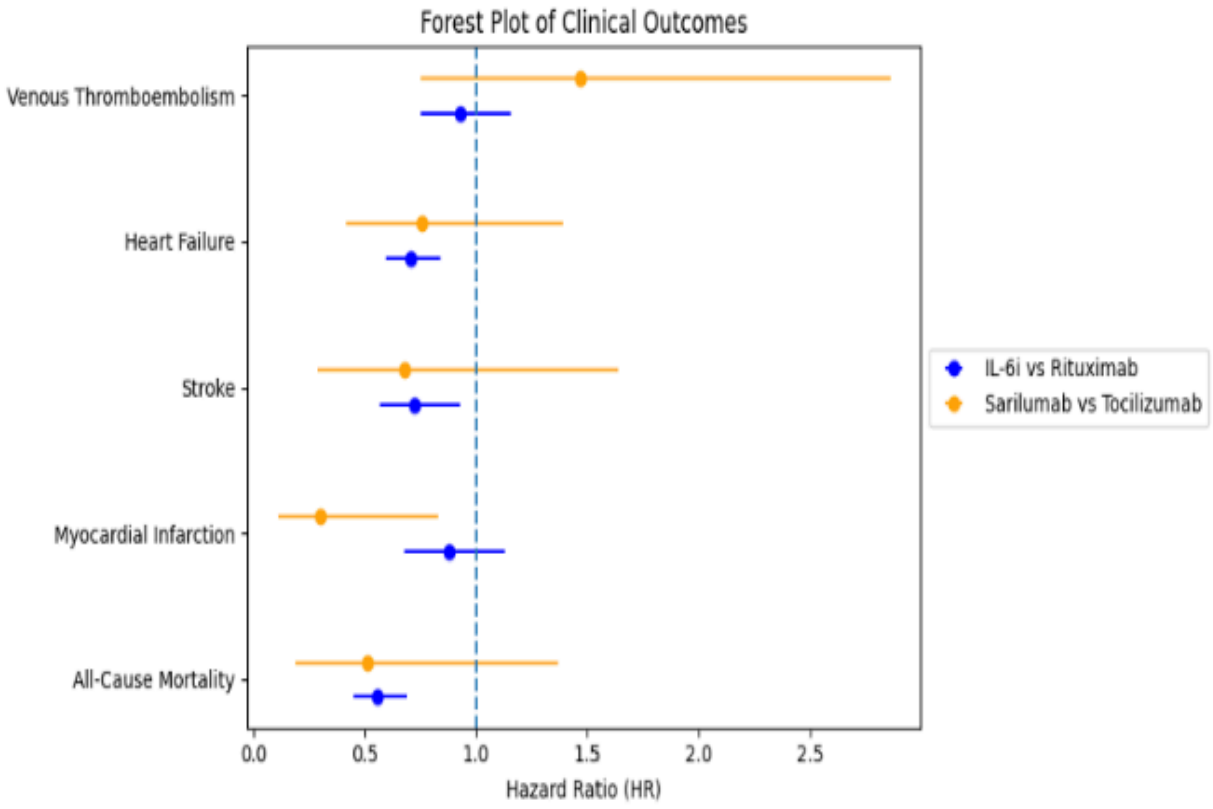


Figure 2. Forest Plot of Clinical Outcomes.

Winner: 3rd Place

Outcomes of Glucagon-Like Peptide-1 Receptor Agonists Versus Sodium-Glucose Cotransporter-2 Inhibitors and Their Combination After Catheter Ablation for Atrial Fibrillation

Adham Ramadan, MD, Ahmed Mahmoud, MD, Ibrahim Kamel, MD, Mohamed Doma, MD, Leon M. Ptaszek, MD, PhD, Jeremy N. Ruskin, MD

Background

GLP-1 receptor agonists (GLP-1 RA) and SGLT2 inhibitors (SGLT2i) improve cardiovascular outcomes, but their effect on atrial fibrillation (AF) recurrence after catheter ablation (CA) remains unclear.

Methods

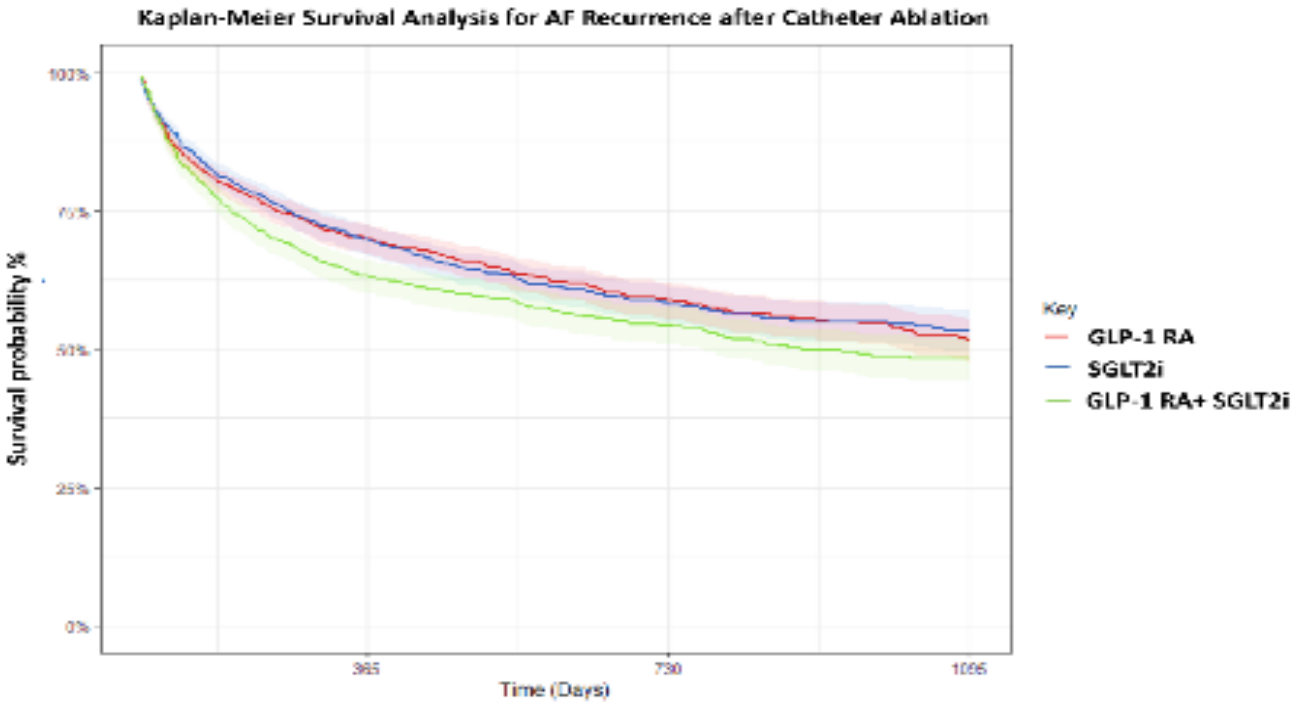
Using the TriNetX database (2015–2024), adults with AF who underwent CA were grouped by GLP-1 RA, SGLT2i, or combination use within 12 months prior. The primary outcome was AF recurrence, defined as repeat CA, cardioversion, or antiarrhythmic drug (AAD) use after a 3-month blanking period. Median follow-up ranged from 1.3–1.5 years across treatment groups. Propensity score matching (PSM) was applied for GLP-1 RA vs SGLT2i, combination vs GLP-1 RA, and combination vs SGLT2i.

Results

In GLP-1 RA vs SGLT2i (n=1,393 each), AF recurrence was similar (HR 1.01, 95% CI 0.89–1.15; p=0.86). In combination vs GLP-1 RA (n=952 each), recurrence was also similar (HR 1.13, 95% CI 0.98–1.31; p=0.10), but overall mortality was lower (HR 0.54, 95% CI 0.34–0.97; p=0.01). In combination vs SGLT2i (n=1,213 each), recurrence was similar (HR 1.09, 95% CI 0.96–1.23; p=0.20), while overall mortality was reduced (HR 0.60, 95% CI 0.40–0.93; p=0.02). Secondary outcomes, including stroke, heart failure, hospitalization, and MACE, were similar.

Conclusions

GLP-1 RAs and SGLT2i alone or in combination showed comparable AF recurrence rates, with no difference when combined. However, combination therapy was consistently associated with lower overall mortality.



Comparison	Log Rank
GLP-1 RA vs SGLT2i	HR 1.01; 95% CI 0.89-1.15; *p*=0.86
GLP-1 RA+SGLT2i vs GLP-1 RA	HR 1.13; 95% CI 0.98-1.31; *p*=0.10
GLP-RA+SGLT2i vs SGLT2i	HR 1.09; 95% CI 0.96-1.24; *p*=0.20

Honorable Mention

Timing of Electroconvulsive Therapy in Catatonia: A Systematic Review of Early Versus Delayed Intervention

Muhammad Anis Musani, M.D.[1], Mubeena Hanif, M.B.B.S.

Department of Psychiatry Boston Medical Center - Brighton, Boston, MA

Background:

Catatonia is a complex neuropsychiatric syndrome characterized by a range of motor, behavioral, and autonomic abnormalities. It is commonly associated with mood disorders, psychotic disorders, and general medical or neurological conditions. Classic clinical features include mutism, stupor, negativism, posturing, waxy flexibility, echolalia, echopraxia, and periods of agitation. In severe cases, patients may develop malignant catatonia, characterized by hyperthermia, autonomic instability, and altered consciousness, which can be life-threatening if untreated. The pathophysiology of catatonia is not fully understood but is believed to involve dysregulation of gamma-aminobutyric acid (GABA), dopamine, and glutamate neurotransmitter systems. Catatonia may be precipitated by psychiatric illnesses such as major depressive disorder, bipolar disorder, and schizophrenia, as well as medical conditions including infections, metabolic disturbances, autoimmune disorders, and medication effects (particularly antipsychotics).Benzodiazepines, particularly Lorazepam, are widely recommended as first-line therapy and are often administered as both a diagnostic and therapeutic challenge. Electroconvulsive Therapy is highly effective, particularly in benzodiazepine-refractory or malignant catatonia. However, the optimal timing for initiation of ECT remains unclear, with variability in clinical practice between early intervention and delayed use following prolonged benzodiazepine trials.

Methods

A systematic literature search was conducted using PubMed, Google Scholar, and the Cochrane Library from database inception through 2026. Search terms included “catatonia,” “electroconvulsive therapy,” “timing,” and “benzodiazepine.” Randomized controlled trials, prospective cohort studies, and retrospective observational studies evaluating the timing of ECT in catatonia were included. Studies comparing early initiation of ECT (within 48–72 hours of diagnosis or limited benzodiazepine trial) versus delayed initiation (following prolonged benzodiazepine treatment or clinical deterioration) were analyzed. Data extracted included study design, patient population, timing of ECT initiation, treatment protocols, and clinical outcomes.

Results

A total of 658 records were identified, with 32 studies meeting inclusion criteria, including three randomized or controlled trials and twenty-nine observational studies. Early initiation of ECT, typically within 48–72 hours of inadequate response to benzodiazepines, was associated with faster clinical improvement, shorter duration of hospitalization, and reduced risk of complications such as malignant catatonia.

Delayed ECT initiation, often after prolonged benzodiazepine trials, was associated with longer time to remission and increased morbidity. Across included studies, there was no single standardized definition of benzodiazepine non-response; however, Common criteria were identified. Most studies defined inadequate response as minimal or no clinical improvement following an adequate trial of benzodiazepines, typically Lorazepam.

An adequate trial was generally described as:

- Failure to respond to an initial lorazepam challenge dose of 1–2 mg administered intravenously or intramusclarly
- Lack of significant clinical improvement after 24–72 hours of scheduled benzodiazepine therapy
- Persistent moderate to severe catatonic symptoms despite dose escalation, often up to 6–8 mg/day or higher

Clinical non-response was assessed using persistent features such as mutism, stupor, rigidity, negativism, and inability to eat or interact. Some studies utilized standardized rating scales, including the Bush–Francis Catatonia Rating Scale, to quantify response, with less than 25–50% reduction in symptom scores considered inadequate improvement. Across studies, ECT was commonly administered two to three times weekly for a total of 6–12 sessions, with clinical improvement frequently observed within the first 2–5 treatments. Bitemporal electrode placement was most commonly used in severe cases to achieve rapid response, while right unilateral placement was used in selected patients to minimize cognitive adverse effects.

Conclusions

Early initiation of electroconvulsive therapy in catatonia may lead to faster symptom resolution and improved clinical outcomes compared to delayed intervention. While benzodiazepines remain first-line therapy, prolonged trials in non-responders may delay definitive treatment. These findings support consideration of earlier transition to ECT, particularly in severe or high-risk cases. Further prospective studies are needed to establish optimal timing guidelines and treatment algorithms

Honorable Mention

Risk of rhabdomyolysis with concomitant use of statins and SGLT2 inhibitors: A population-based cohort study

Ahmed K. Mahmoud, Kamal Awad, Ibrahim Kamel, Adham Ramadan, Benjamin Horn, Reza Arsanjani, Richard Patten

Background

Statins are foundational for cardiovascular risk reduction but are associated with muscle-related adverse events, including rare cases of rhabdomyolysis. Sodium–glucose cotransporter-2 inhibitors (SGLT2i), increasingly co-prescribed in patients with type 2 diabetes mellitus (T2DM), have raised concerns regarding potential drug–drug interactions that may increase myotoxicity risk.

Methods

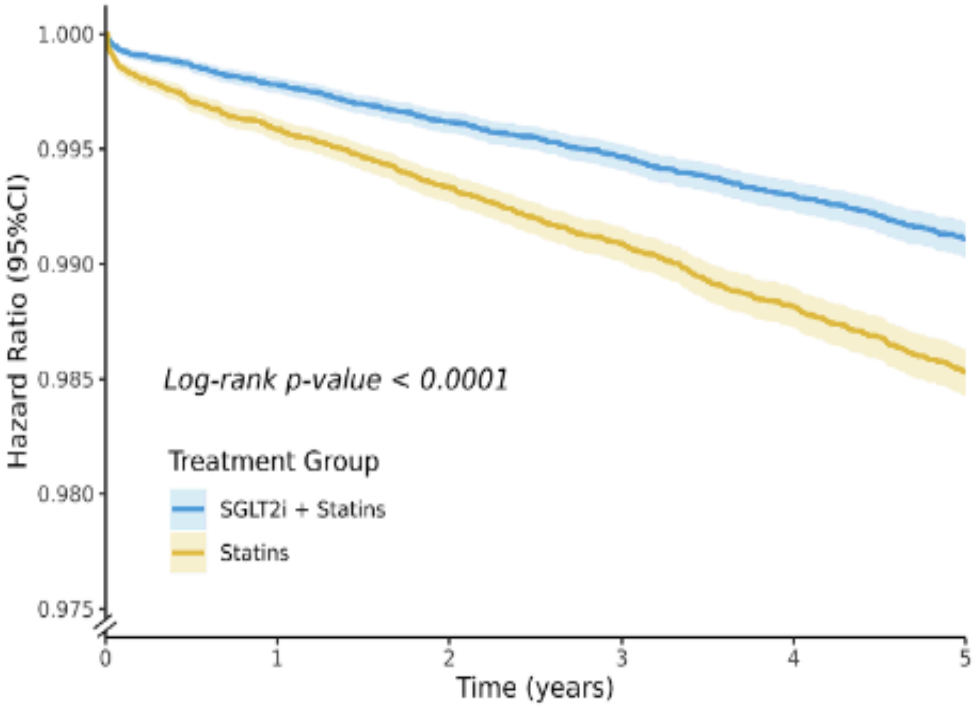
We conducted a retrospective population-based cohort study using the TriNetX database, including adults (≥18 years) with T2DM receiving statin therapy between 2010 and 2020. Patients were stratified based on SGLT2i exposure within 3 months of statin initiation. The primary outcome was rhabdomyolysis, defined by ICD-10 codes or creatine kinase ≥1000 U/L. Propensity score matching (1:1) adjusted for demographics, comorbidities, medications, and laboratory values. Outcomes were assessed using Kaplan–Meier analysis and Cox proportional hazards modeling over a follow-up of up to 5 years.

Results

Among 2,798,547 statin users, 82,013 (2.9%) received SGLT2i. After matching, 58,797 patients were included in each group. Over a mean follow-up of 3.9 years, the 5-year cumulative incidence of rhabdomyolysis was lower in the SGLT2i group compared with statin-only users (0.88% vs. 1.22%, p=0.0001). SGLT2i use was independently associated with a reduced risk of rhabdomyolysis (hazard ratio 0.71, 95% CI 0.62–0.80) (Figure).

Conclusions

Concomitant SGLT2i therapy is associated with a lower risk of rhabdomyolysis among statin users. These findings support the safety of combined therapy and suggest a potential protective effect, warranting further prospective investigation.


1.000
0.995
0.990
0.985
0.980
0.975
Hazard Ratio (95%CI)
Log-rank p-value < 0.0001
Treatment Group
SGLT2i + Statins
Statins
0
1
2
3
4
5
Time (years)

Elevated Body Mass Index as a Predictor of New-Onset Heart Failure After Catheter Ablation for Atrial Fibrillation

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Introduction

Atrial fibrillation (AF) is the most common sustained arrhythmia and a major contributor to heart failure (HF). Although catheter ablation (CA) reduces HF progression in AF patients, a subset remains at risk for developing HF. Body mass index (BMI) is a known cardiovascular risk factor, but its association with post-ablation HF has not been well defined.

Methods

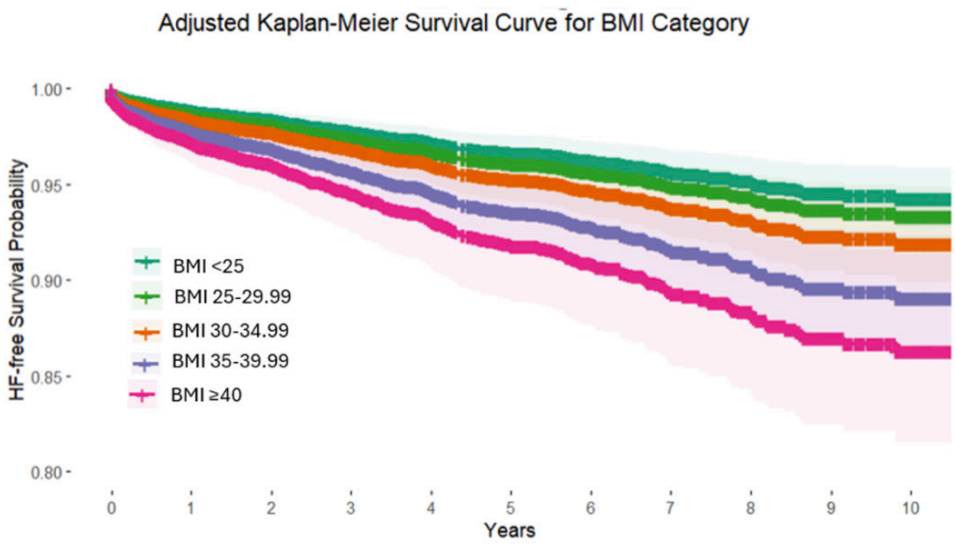
This retrospective cohort study included patients who underwent first-time CA for AF between 2013 and 2024. Patients with preexisting HF or missing BMI data were excluded. The primary outcome was new-onset HF post-ablation. Multivariable Cox regression was used to identify independent predictors of HF, and Kaplan-Meier analysis assessed HF-free survival across BMI categories.

Results

Of 7,363 eligible patients, 550 (7.5%) developed new-onset HF during a mean follow-up of 3.62 ±2.89 years. Patients who developed HF were older (mean 67.5±10.1 vs. 64.4±10.2 years) and more likely to be female (39.5% vs. 31.8%). HF-free survival declined progressively with increasing BMI (Figure 1). At 5 and 10 years post-ablation, HF-free survival was 96.7% and 94.2% for BMI <25; 96.1% and 93.3% for BMI 25–29.99; 95.3% and 91.9% for BMI 30–34.99; 93.4% and 89.0% for BMI 35–39.99; and 91.8% and 86.3% for BMI ≥40. In multivariable Cox regression (Figure 2), older age, particularly >75 years, strongly predicted post-ablation HF (HR [CI]:2.55 [2.10–3.09], p<0.001). Additional independent predictors included female sex (HR [CI]:1.41 [1.16–1.73], p<0.001), hypertension (HR [CI]: 1.28 [1.03–1.59], p=0.02), ischemic heart disease (HR: 1.44 [1.19–1.74], p<0.001), mitral regurgitation (HR [CI]:2.60 [2.07-3.27], p<0.001), aortic stenosis (HR [CI]:1.97 [1.38-2.80], p<0.001), pulmonary hypertension (HR: 3.02 [2.26-4.050], p<0.001), pulmonary embolism (HR [CI]: 1.99 [1.23-3.21], p<0.001), and eGFR <60 mL/min (HR [CI]: 2.51 [1.87-3.37], p<0.001). Higher BMI also showed a graded increase in risk compared to BMI <25. BMI 30-34.99 (HR [CI]: 1.35[1.04-1.79], p=0.02), BMI 35-39.99 (HR [CI]: 1.68 [1.23-2.28] p<0.001), BMI ≥40 vs BMI <25 (HR [CI]: 2.31[1.56-3.41], p<0.001)

Conclusions

Elevated BMI is a strong modifiable independent predictor of new-onset HF following AF ablation, with risk rising progressively across higher BMI categories. Interventions aimed at reducing BMI may play an important role in lowering HF risk and improving long-term outcomes in patients with AF.



BMI	0	1	2	3	4	5	6	7	8	9	10
<25	1,588	1,270	971	776	613	490	357	259	165	80	32
25-29.99	2,938	2,267	1,821	1,457	1,141	930	699	514	318	169	74
30- 34.99	1,796	1,393	1,081	866	672	541	398	291	180	91	36
35-39.99	700	532	417	332	269	220	162	119	66	33	16
≥40	294	221	171	138	103	86	67	56	39	17	9

Figure 1. Kaplan-Meier curves showing heart failure-free survival by BMI category among all patients. A progressive decline in HF-free survival is observed with increasing BMI. Curves are color-coded as follows: teal for BMI <25, green for BMI 25–29.99, orange for BMI 30–34.99, purple for BMI 35–39.99, and pink for BMI ≥40. Log-rank p < 0.001. BMI: Body Mass Index; HF: Heart Failure.

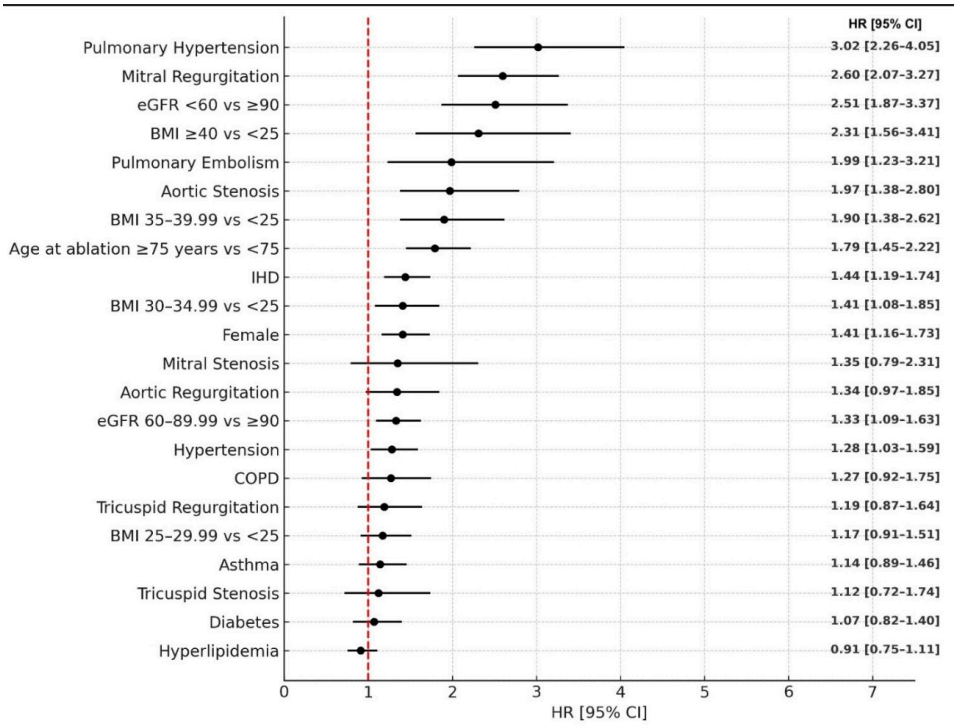


Figure 2. Forest plot of multivariable-adjusted hazard ratios (HR) and 95% confidence intervals (CI) for predictors of heart failure after catheter ablation for atrial fibrillation. AF: Atrial Fibrillation; BMI: Body Mass Index; CI: Confidence Interval; COPD: Chronic Obstructive Pulmonary Disease; eGFR: Estimated Glomerular Filtration Rate; HR: Hazard Ratio; IHD: Ischemic Heart Disease.

Creatine for Cognition in Autism Spectrum Disorder: A Novel Therapeutic Intervention

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Background

Cognitive impairments are common and not well understood in Autism Spectrum Disorder (ASD). These deficits are particularly evident in domains such as working memory, processing speed, and short-term memory. Current pharmacological and behavioral interventions provide only limited improvements in cognition. Emerging research suggests that disrupted brain energy metabolism, including mitochondrial dysfunction and abnormalities in creatine-phosphocreatine systems, may contribute to these impairments. Creatine is a naturally occurring compound that supports ATP regeneration in high-demand brain regions and has shown cognitive benefits in other populations.

Methods

We conducted a review of literature using PubMed, Google Scholar, and Scopus. Search terms included combinations of "creatine," "cognition," "autism," "ASD," "mitochondrial dysfunction," "brain energy," "working memory," and "processing speed." We selected peer-reviewed publications from the past two decades, including preclinical studies, clinical trials, case reports, and mechanistic reviews relevant to creatine and neuroenergetics in ASD.

Results

Multiple studies report that individuals with ASD show signs of mitochondrial dysfunction, altered oxidative stress responses, and reduced cerebral creatine levels. Preclinical models of creatine transporter deficiency replicate several features of ASD and demonstrate cognitive rescue with administration of creatine analogs. In human populations, creatine supplementation has been associated with modest improvements in memory, attention, and processing speed. These effects are especially relevant to the cognitive domains most commonly affected in ASD.

Conclusion

Creatine supplementation may represent a low-risk and mechanistically plausible intervention for improving cognition in ASD. Based on the convergence of preclinical and translational evidence, we propose that future research should explore creatine as a cognitive enhancer in ASD, particularly in individuals with evidence of energy metabolism abnormalities. This commentary provides a foundation to guide the design of pilot studies targeting this promising yet understudied therapeutic pathway.

Changing Pain Paradigms in Breast Reconstruction: The Impact of an ERAS Protocol including Gabapentin on Postoperative Opioid Use

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Background

Perioperative pain control for mastectomy and immediate breast reconstruction is important. Enhanced recovery after surgery (ERAS) pathways emphasize opioid-sparing strategies, but the impact on postoperative opioid use in breast surgery remains unclear.

Methods

A retrospective review comparing postoperative opioid use (OME) and prescribing patterns between initiation and full implementation of ERAS was performed.

Results

Among 650 patients, 331 were in the early cohort and 319 were in the contemporary cohort. The contemporary cohort had lower intraoperative (60 vs 75 mg), PACU (16.5 vs 45 mg), and total perioperative opioid use (82.5 vs 126.0 mg OME; all $p<0.001$). Post-discharge gabapentin prescribing increased markedly (95.3% vs 37.8%, $p<0.001$), while opioid prescriptions decreased in size (150 vs 300 mg OME; $p<0.001$). Although opioid refill rates were similar (27.9% vs 28.1%), refill amounts were lower in the contemporary cohort (100 vs 225 mg OME; $p<0.001$), resulting in lower total post-discharge opioid exposure. Multivariable analysis showed that patients who received an initial gabapentin prescription after discharge had significantly lower total opioid use ($p<0.001$) and lower opioid refill amounts ($p=0.005$). In addition, the receipt of 2 preoperative analgesic agents ($n=148$) was independently associated with lower total post-discharge opioid ($p=0.034$).

Conclusions

Full implementation of an ERAS protocol including post-discharge gabapentin was associated with lower post-discharge opioid consumption after mastectomy with immediate implant-based reconstruction. Gabapentin represents a valuable adjunct in modern multimodal pain management.

Comparative Outcomes of tfCAS vs CEA vs TCAR in Standard and High-Risk Patients Since the CMS decision in October 2023 using the VQI

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Objective

In October 2023, CMS approved transfemoral carotid artery stenting (tfCAS) for standard-risk patients. Thus, we sought to compare outcomes among tfCAS, TCAR, and CEA in standard-risk and high-risk patients.

Methods

All carotid revascularization procedures in the VQI following the CMS decision (October 2023–March 2025) were analyzed. Patients were classified as standard or high-risk per CMS criteria and stratified by symptom status. The primary outcome was perioperative stroke/death. Inverse probability of treatment weighting (IPTW) was performed to mitigate selection bias in high-risk patients and included demographics, comorbidities, physician volume, and operative characteristics. IPTW was also applied to symptomatic standard-risk patients to account for the large proportion of tfCAS cases performed outside of SVS guidelines.

Results

Overall, 57,843 patients underwent revascularization (9,123 tfCAS, 21,814 TCAR, and 26,906 CEA). Before weighting, tfCAS patients were more often symptomatic (standard-risk: tfCAS: 45% vs. TCAR: 25% vs. CEA: 31%, P<.01; high-risk: 35% vs. 24% vs. 28%, P<.01), more frequently had a Rankin score of 4 or 5 (standard-risk: 7.7% vs. 2.4% vs. 1.7%; high-risk: 6.6% vs. 2.6% vs. 2.4%, P<.01) and more frequently underwent urgent or emergent surgery (standard-risk: 33% vs. 11% vs. 16%, high-risk: 28% vs. 12% vs. 17%, P<.01). Standard-risk asymptomatic patients undergoing tfCAS had the highest rates of perioperative stroke/death (1.6% vs. 1.2% vs. 1.0%, P=.01), as did symptomatic patients (2.9% vs. 1.9% vs. 1.7%, P=.01). tfCAS was associated with higher overall odds of stroke/death compared to CEA (OR 1.89 [1.43, 2.48] P<.01) and TCAR (OR 1.59 [1.15,2.18] P<.01). Compared to CEA tfCAS was associated with higher odds of stroke/death in both asymptomatic (OR 1.71 [1.12, 2.55] P=.01) and symptomatic patients (aOR 1.78 [1.21, 2.56] P<.01). After weighting, there were no significant differences in perioperative stroke/death overall for either tfCAS or TCAR compared to CEA in standard-risk symptomatic patients. In high-risk patients, TCAR was associated with lower odds of perioperative stroke/death overall compared to CEA (1.5% vs. 2.1%, aOR 0.75[0.59, 0.94] P=.01) while tfCAS had higher odds of stroke/death compared to TCAR. (1.5% vs. 2.4%, aOR 1.57 [1.25, 1.98] P<.01).

Conclusions

In this retrospective analysis, there were higher odds of perioperative stroke/death when comparing tfCAS to CEA overall and among asymptomatic and symptomatic standard-risk patients, as well as overall compared to TCAR. In high-risk patients, TCAR performed better with lower odds of stroke/death compared to both CEA and tfCAS.

Evaluation of Antimicrobial Use and Resistance Before and After COVID-19 Pandemic: A 6-Year Retrospective Evaluation

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Background

The antimicrobial stewardship (AMS) program at our institution has been maintained with continuous adaptation to optimize antimicrobial use. Previously published reports from our institution showed a significant improvement in antimicrobial use and clinical outcomes. However, several studies demonstrated a significant increase in antimicrobial consumption and resistance following COVID-19, likely due to the disruption of AMS activities. The primary objective of this study is to evaluate antimicrobial days of therapy (DOT) before, during, and after the COVID-19 pandemic in hospitalized adults over 6 years.

Methods

This is a single-center, retrospective study among adults admitted during the study period. IRB exemption was approved. Data were analyzed every other quarter from Q2 2019 to Q2 2025. The primary outcome was the antimicrobial DOT per 1,000 patient-days. Secondary outcomes included Clostridioides difficile rate per 10,000 patient-days, hospital-acquired methicillin-resistant Staphylococcus aureus (MRSA) bacteremia per 1,000 patient-days, and antimicrobial resistance as an annual rate per 1000 patient-days and as percentage before, during, and after COVID-19. DOT and antimicrobial resistance were defined according to the National Healthcare Safety Network. A planned secondary analysis was conducted among patients who received restricted antimicrobial therapy for ≥3 days to evaluate the long-term sustainability of day-3 reauthorization using a historical comparison with data reported in 2012-2013. Descriptive analysis was conducted using count and percentage for categorical data and median [IQR] for contiguous data. Inferential analysis was used to compare changes in DOT and resistance before, during, and after COVID-19 periods. Categorical variables were compared using a $\chi 2$ test, while Kruskal–Wallis rank sum test was used for continuous data.

Results

Overall, antimicrobial DOT did not change during the study period ($P = 0.12$). However, antipseudomonal DOT showed a downward trend, and this was statistically significant ($P = 0.02$). Among secondary outcomes, C. difficile rate was trending down before COVID-19, likely due to previous AMS interventions, and this persisted after COVID-19. Hospital-onset MRSA bacteremia rate was low and stable throughout the study period. Furthermore, the annual antimicrobial resistance rate per 1000 patient days (MRSA, vancomycin-resistant Enterococci, multidrug resistant [MDR] Enterobacterales, MDR Pseudomonas spp.) slightly declined during COVID-19, then returned to baseline afterward. When analysis was summarized as percentage before, during, and after COVID-19, there was a significant reduction in MDR Pseudomonas spp. ($P < 0.001$) and increase in MRSA infections ($P = 0.008$).

However, this was driven mainly by community-acquired infections. A total of 210 patients were randomly selected for the secondary analysis. The impact of day-3 reauthorization was not consistent at six years of follow-up. This could be explained by the reduction in the time to de-escalation after the implementation of rapid diagnostics in 2018.

Conclusion

Overall antimicrobial DOT did not increase during COVID-19 among hospitalized patients. However, broad-spectrum antimicrobial consumption declined during and after the COVID-19 period. Moreover, the overall antimicrobial resistance did not increase following COVID-19. AMS interventions should be re-evaluated periodically to guide future decisions and optimize stewardship workflow and outcomes.

Association Between Depression and Risk of Developing Atrial Fibrillation in Young Adults: A Propensity-Matched Analysis of a Large Real-World Database

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Department of Medicine, Boston Medical Center - Brighton. Department of Medicine, Division of Cardiology, Section of Electrophysiology, Boston Medical Center - Brighton.

Background

Depression has been associated with adverse cardiovascular outcomes. However, its relationship with atrial fibrillation (AF), particularly in younger patients, remains incompletely described. We aimed to evaluate the association between depression and the risk of developing AF in a large real-world population of young adults.

Methods

We conducted a retrospective cohort study using the TriNetX database, including patients aged 20–40 years between January 1, 2016, and December 31, 2025. Patients with depression were identified using standard ICD-10 codes and compared to matched patients without depression. Patients with prior antiarrhythmic drug use were excluded from both groups, and patients with prior antidepressant use were excluded from the control group.

The primary outcome was the incidence of all atrial fibrillation types, including paroxysmal, persistent, chronic, and unspecified AF, identified using ICD-10 codes. Propensity score matching was performed to adjust for baseline characteristics and comorbidities, including age, sex, hypertension, diabetes mellitus, obesity, ischemic heart disease, heart failure, mitral valve disorders, obstructive sleep apnea, hyperthyroidism, and nicotine dependence. Patients with a prior AF diagnosis were excluded from the analysis. Median follow-up time was 985 days in the depression group and 861 days in the control group.

Results

After propensity score matching, each group included 2,245,685 patients. Following exclusion of patients with a prior AF diagnosis, 2,240,921 patients remained in the depression group and 2,242,382 in the control group. Kaplan–Meier analysis demonstrated a significantly higher cumulative incidence of AF in the depression group (log-rank $p < 0.0001$), with depression associated with a 28% higher risk of developing AF over time (HR 1.28, 95% CI 1.23–1.33).

Conclusions

In this large real-world population of young adults, depression was associated with a significantly increased risk of developing atrial fibrillation, even after adjustment for cardiovascular and metabolic comorbidities. These findings suggest that depression may be an independent risk factor for developing AF at a younger age and highlight the importance of arrhythmia risk stratification and surveillance in this population.

Impact of Anticoagulation on Incidence of Cerebrovascular Accident After Epicardial Left Atrial Appendage Occlusion: A Retrospective Descriptive Analysis

Daniel Feldman, DO,MPH, Tariq Emaish, MD , Lianteng Zhi, PhD, Dina Murad, MD, and Zaid Ammari, MD, MPH

Background

Atrial fibrillation is one of the most prevalent cardiac arrhythmias globally. In patients with atrial arrhythmias, the left atrial appendage (LAA) has been implicated in up to 90% of thrombus formation. Surgical LAA exclusion in addition to continued anticoagulation (AC) is recommended as a Class 1A recommendation, however true incidence of cerebrovascular accident (CVA) after LAA occlusion in the absence of continued AC is uncertain.

Methods

A retrospective cohort analysis of individuals who underwent open cardiac surgery where LAA occlusion was performed. All patients who were 18 years or older at the time of admission were included and only those who died during the index admission were excluded. The study spanned from October 2015 to December 2022 at a tertiary healthcare system in the northeastern United States. The exposure is whether the patient was discharged on AC. The primary outcome was the incidence of CVA, and the secondary outcome was bleeding events, both at one-year post-index visit.

Results

A total of 934 patients were included in the analysis with 471 (50.4%) being discharged without AC. Of those, 462 subjects had a history of atrial arrhythmia. A total of 5 subjects had a CVA, 3 of which were not discharged on anticoagulation. A total of 37 (4.0%) subjects had a major bleeding event, of which 21 (2.3%) were discharged on AC. (Table 1). A subgroup analysis of only those with a history of arrythmia revealed 327 (70.8%) patients in the subgroup were discharged on AC. Of this subgroup, the mean CHA2DS2-VASc score was 4.0 + 2.1 for those discharged on AC and 3.5 + 2.3 for those not discharged on AC. A total of 2 CVA occurred, both in the group not discharged on AC. Bleeding events occurred in 19 (4.1%) subjects, 14 (3.0%) of which were discharged on AC. (Table 2)

Conclusions

The findings of this retrospective analysis suggest that AC after surgical LAA intervention may be beneficial in reducing the risk of CVA, particularly in patients with a history of atrial arrhythmias. This is, however, accompanied by a higher incidence of bleeding events. Ultimately, given the low number of outcomes recorded, larger multicenter prospective studies will need to be conducted to understand the true impact of AC on CVA and bleeding risks following surgical LAA intervention.

	Total (n=934)	Anticoagulation (n=463)	No Anticoagulation (n=471)
Age, mean ± SD	68.4 ± 9.4	69.3 ± 9.3	67.6 ± 9.6
Sex – male, n (%)	667 (71%)	321 (34.4%)	346 (37.0%)
Race, n(%)			
Black	114 (12.1%)	54 (5.8%)	59 (6.3%)
White	775 (83.0%)	390 (41.8%)	385 (41.2%)
Other	46 (4.9%)	19 (2.0%)	27 (2.9%)
Atrial Arrythmia History – Yes, n (%)	462 (49.5%)	327 (35.0%)	135 (14.5%)
CHAD2S2-VASc score, , mean ± SD	3.6 ± 2.1	3.9 ± 2.1	3.3 ± 2.2
Comorbidity Index, mean ± SD	5.7 ± 3.8	6.4 ± 3.8	5.0 ± 3.7
Cerebrovascular Accident (Yes), n (%)	5 (0.5%)	2 (0.2%)	3 (0.3%)
Bleeding Events – Yes, n (%)	37 (4.0%)	21 (2.3%)	16 (1.7%)

	Total (n=462)	Anticoagulation (n=327)	No Anticoagulation (n=135)
Age, mean ± SD	69.9 ± 9.22	69.8 ± 9.3	70 ± 9.1
Sex – male, n (%)	330 (71.4%)	232 (50.2%)	98 (21.2%)
Race, n (%)			
Black	50 (10.8%)	38 (8.2%)	12 (2.6%)
White	399 (86.4%)	279 (60.4%)	120 (26.0%)
Other	13 (2.8%)	20 (2.16%)	3 (0.7%)
Bleeding Events – Yes, n (%)	19 (4.1%)	14 (3.0%)	5 (1.1%)
CHAD2S2-VASc score, mean ± SD	3.8 ± 2.2	4.0 ± 2.1	3.5 ± 2.3
Comorbidity Index, mean ± SD	6.0 ± 3.9	6.6 ± 3.8	4.8 ± 4.0
Cerebrovascular Accident (Yes), n (%)	2 (0.4%)	0 (0.0%)	2 (0.4%)

Trends in Racial and Socioeconomic Disparities in Reperfusion Therapy Utilization for Acute Ischemic Stroke in the United States, 2011–2022

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Background

Disparities in access to reperfusion therapies for acute ischemic stroke (AIS) persist despite advances in stroke systems of care. Racial, ethnic, and socioeconomic gaps in intravenous thrombolysis (IVT) and mechanical thrombectomy (MT) utilization have been documented across multiple national databases. Although treatment rates rose substantially over two decades across all demographic groups, Black, Hispanic, and low-income patients have consistently received these therapies at lower rates than White patients. Identifying what structural factors sustain these gaps remains essential to advancing equitable stroke care. In this study, We evaluated temporal national trends in trends in racial, ethnic, and socioeconomic disparities the utilization of IVT, MT and to identified factors associated with persistent treatment gaps across demographic groups.

Methods

We conducted a retrospective cohort study using the Nationwide Inpatient Sample (2011–2022). Adult patients with AIS who received reperfusion were included. Multivariable logistic regression models assessed associations between race, insurance status, and treatment utilization, adjusting for demographic, clinical, and hospital-level variables. Temporal trends were evaluated across the study period.

Results

Among 824,285 AIS hospitalizations, 90,421 (9.9%) received reperfusion therapy. African American and Hispanic patients had higher odds of receiving IVT (adjusted OR 1.28 and 1.14, respectively; $p<0.001$) but lower odds of receiving MT (adjusted OR 0.80 and 0.92; $p<0.01$) compared with White patients, with disparity direction reversing in non-academic settings. Medicare insurance largely attenuated racial disparities. MT-only utilization increased from 6.1% to 35.1% , whereas IVT-only from 86.4% to 57.3% ($P<0.001$). teaching hospitals experienced a 57.9-point MT-only increase versus only 29.9 points in non-teaching facilities, where IVT-only remained dominant (76%) by 2022. MT-only utilization followed a non-monotonic trajectory, peaking at 40% in 2018 before declining sharply in 2020, consistent with COVID-19-related disruption. Despite significant declines in mortality across all approaches, IVT only from 9.0% to 5.9%, MT only from 23.1% to 12.0%, and IVT & MT from 20.5% to 8.4% (all $p<0.001$, mean hospitalization costs rose substantially: IVT only from \$80,619 to \$150,983, MT only from \$179,737 to \$230,694, and IVT & MT from \$168,134 to \$224,974 (all $p<0.001$)

Conclusions

Significant racial and socioeconomic disparities persist in the utilization of advanced reperfusion therapies for AIS in the United States. African Americans and Hispanics remained disproportionately channeled toward IVT over MT, with disparity direction reversing in non teaching settings. Structural and institutional-level factors beyond individual patient charateristics are key drivers of inequitable access to advanced stroke interventions

Table 1: *Distribution of reperfusion treatment procedures for Acute Ischemic Stroke (AIS) as a function of patient demographic variables and hospital characteristics from 2011 to 2022,* N= 90,421

Variable	All Patients n (%) 90,421 (100.0)	IVT Only n (%) 60,807 (67.2)	MT Only n (%) 21,805 (24.1)	IVT & MT n (%) 7,809 (8.6)	P-value
Age, mean (SD) (year)	69.4 (14.6)	69.8 (14.6)	68.6 (14.7)	68.4 (14.7)	<0.001
Age categories, n (%)					<0.001
<55	14,901 (16.5)	9,792 (16.1)	3,714 (17.0)	1,395 (17.9)	
55 – 64	16,770 (18.5)	11,192 (18.4)	4,068 (18.7)	1,510 (19.3)	
65 – 74	21,222 (23.5)	13,997 (23.0)	5,378 (24.7)	1,847 (23.7)	
75 – 84	21,889 (24.2)	14,607 (24.0)	5,393 (24.7)	1,889 (24.2)	
>84	15,635 (17.3)	11,217 (18.4)	3,252 (14.9)	1,166 (14.9)	
Sex, n (%)					0.010
Male	45,150 (49.9)	30,566 (50.3)	10,705 (49.1)	3,879 (49.7)	
Female	45,255 (50.1)	30,229 (49.7)	11,098 (50.9)	3,928 (50.3)	
Race, n (%)					<0.001
White	59,767 (69.3)	40,197 (69.1)	14,579 (70.5)	4,991 (67.5)	
African-American	13,226 (15.3)	9,075 (15.6)	3,009 (14.6)	1,142 (15.4)	
Hispanic	7,222 (8.4)	4,940 (8.5)	1,612 (7.8)	670 (9.1)	
Asian/Pacific Islander	6,015 (7.0)	3,949 (6.8)	1,476 (7.1)	590 (8.0)	
Insurance status, n (%)					<0.001
Medicare	56,349 (62.4)	38,341 (63.1)	13,373 (61.4)	4,635 (59.5)	
Medicaid	8,020 (8.9)	5,071 (8.3)	2,201 (10.1)	748 (9.6)	
Private	19,720 (21.8)	13,019 (21.4)	4,817 (22.1)	1,884 (24.2)	
Self-Pay	6,214 (6.9)	4,301 (7.1)	1,384 (6.4)	529 (6.8)	<0.001
Charlson comorbidity index (CCI), mean (SD)	1.4 (2.0)	1.7 (2.1)	0.6 (1.6)	1.3 (2.0)	<0.001
Comorbidity Groups, n (%)					<0.001
No Comorbidity	53,163 (58.8)	29,919 (49.2)	18,256 (83.7)	4,988 (63.9)	
One or More Comorbidities	37,258 (41.2)	30,888 (50.8)	3,549 (16.3)	2,821 (36.1)	
Comorbidities, n (%)					
Acute Myocardial Infarction	4,162 (4.6)	3,410 (5.6)	419 (1.9)	333 (4.3)	<0.001
Congestive Heart Failure	6,793 (7.5)	5,406 (8.9)	759 (3.5)	628 (8.0)	<0.001
Peripheral Vascular Disease	2,015 (2.2)	1,710 (2.8)	180 (0.8)	125 (1.6)	<0.001
Cerebrovascular Disease	37,257 (41.2)	30,887 (50.8)	3,549 (16.3)	2,821 (36.1)	<0.001
COPD	5,903 (6.5)	4,986 (8.2)	518 (2.4)	399 (5.1)	<0.001
Diabetes Mellitus	9,506 (10.5)	8,069 (13.3)	819 (3.8)	618 (7.9)	<0.001
Hemiplegia/Paraplegia	20,652 (22.8)	16,121 (26.5)	2,439 (11.2)	2,092 (26.8)	<0.001
Renal Disease	4,962 (5.5)	4,284 (7.0)	387 (1.8)	291 (3.7)	<0.001
Household Income, n (%)					<0.001
0 – 25 percentile	24,072 (27.1)	15,984 (26.7)	5,998 (28.0)	2,090 (27.2)	
26 – 50 percentile	21,946 (24.7)	14,528 (24.3)	5,583 (26.1)	1,835 (23.9)	
51 – 75 percentile	22,652 (25.5)	15,405 (25.8)	5,326 (24.9)	1,921 (25.0)	
76 – 100 percentile	20,232 (22.8)	13,866 (23.2)	4,521 (21.1)	1,845 (24.0)	
Hospital Region					<0.001
Northeast	15,706 (17.4)	10,795 (17.8)	3,729 (17.1)	1,182 (15.1)	
Midwest	18,967 (21.0)	12,384 (20.4)	4,930 (22.6)	1,653 (21.2)	
South	36,121 (39.9)	24,253 (39.9)	8,719 (40.0)	3,149 (40.3)	
West	19,627 (21.7)	13,375 (22.0)	4,427 (20.3)	1,825 (23.4)	
Hospital Bed Size					<0.001
Small/Medium	30,193 (33.4)	22,907 (37.7)	5,194 (23.8)	2,092 (26.8)	
Large	60,100 (66.6)	37,784 (62.3)	16,605 (76.2)	5,711 (73.2)	
Hospital Location/Teaching Status					<0.001
Urban: Teaching	71,250 (78.9)	44,326 (73.0)	20,135 (92.4)	6,789 (87.0)	
Rural/Urban: Non-teaching	19,043 (21.1)	16,365 (27.0)	1,664 (7.6)	1,014 (13.0)	

Figure 1: Temporal Trends in the Utilization of Reperfusion Treatments for Acute Ischemic Stroe (AIS) Stratified by Hospital Location/Teaching Status

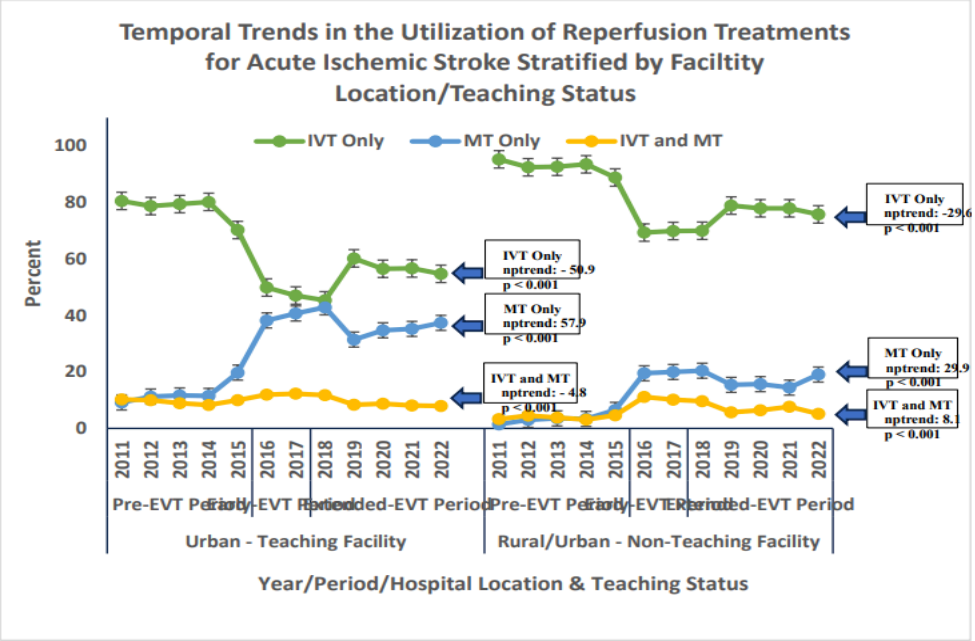
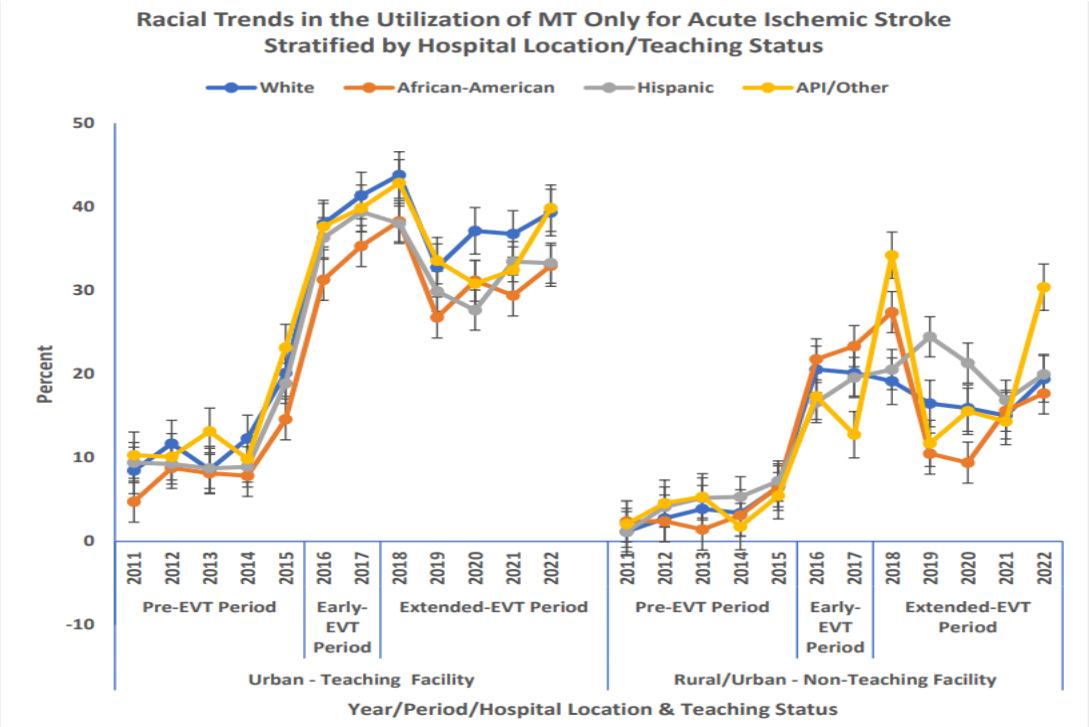


Figure 2: Racial Trends in the Utilization of Mechanical Thrombectomy/Endovascular Therapy Only (MT) for Acute Ischemic Stroke by Year, EVT Period, and Hospital Location/Teaching Status



Safety and Effectiveness of Hypothermia as Adjunctive Therapy in Percutaneous Coronary Intervention for ST-elevation MI: A Comprehensive Meta-analysis

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Objectives

This meta-analysis aims to assess the effectiveness of hypothermia as an adjunctive therapy in percutaneous coronary intervention (PCI) for patients with ST-elevation MI.

Methods

A comprehensive literature search was conducted using electronic databases to identify relevant studies published up to September 2023. Studies investigating the use of adjunctive hypothermia in ST-elevation MI patients undergoing PCI were included. Data on clinical outcomes, including mortality, infarct size, left ventricular function, major adverse cardiac events and microvascular obstruction, were extracted and analyzed. Bleeding and infection events as primary safety endpoints in the safety analysis were also assessed. We aimed to assess the effectiveness of hypothermia as an adjunctive therapy in percutaneous coronary intervention (PCI) for patients with ST-elevation MI.

Results

Eight studies involving 488 patients were included in this meta-analysis. The pooled analysis revealed no significant difference in all-cause mortality between the adjunctive hypothermia group and the control group (OR 0.60; 95% CI [0.24–1.53], p=0.29). There was no significant difference in major adverse cardiac event rates between the two groups (OR 1.59; 95% CI [0.63–4.01]). Additionally, no significant differences were observed in infarct size, left ventricular function or microvascular obstruction. In the safety analysis, hypothermia significantly increased the risk of infection (OR 7.22, 95% CI [2.47–21.10]; p=0.0003; I^2=0%) but showed no significant impact on bleeding events (OR 2.27; 95% CI [0.76–6.78]; p=0.14; I^2=0%).

Conclusions

While previously believed to show promise, hypothermia as adjunctive therapy in PCI fails to achieve any significant superiority over standard interventions according to our analysis. Furthermore, hypothermia was associated with a significantly increased risk of infection without a notable impact on bleeding events, raising concerns about its safety profile. Nevertheless, our findings should be interpreted with caution, considering the limitations of our analysis, such as the small number of studies available in the literature. Continued research efforts on larger sample sizes are essential to either refine or refute the current findings.

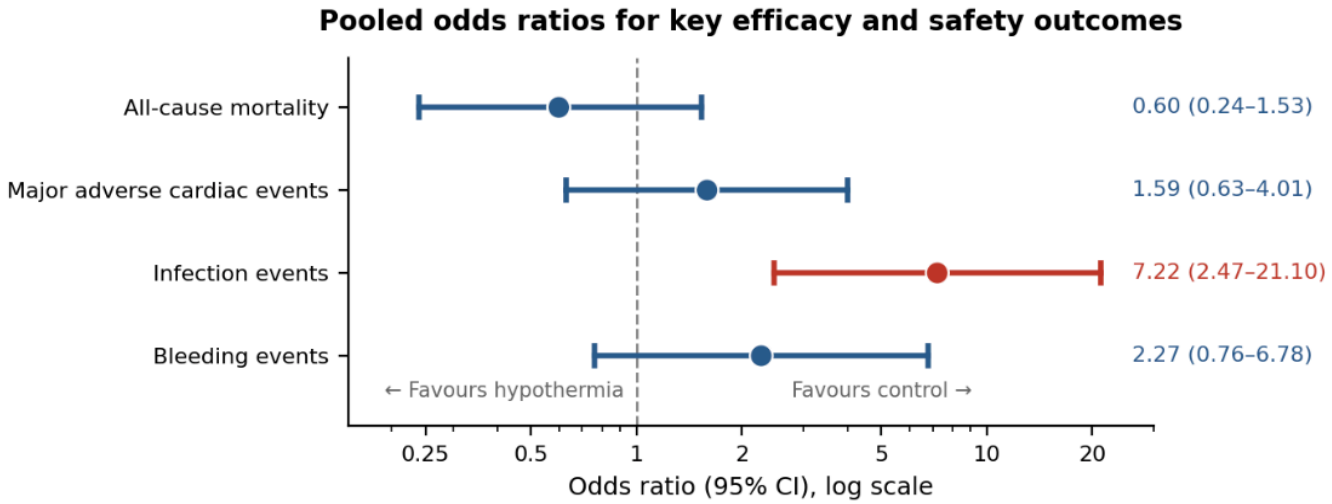


Figure 1. Pooled odds ratios (95% CI) for key efficacy and safety outcomes. Estimates to the right of the line of no effect (OR = 1) favor the control group. The infection endpoint was the only outcome reaching statistical significance.

Latent Profiles of Parenchymal Abnormalities and Vascular Features Measured by Quantitative CT Identifies a Subgroup of Systemic Sclerosis Patients With a Greater Lung Function Decline Over Time

Alicia Hinze, Nishanth Katukuri, Robert Vassallo, Ami Shah, Ryan Lennon, Brian Bartholmai and Cynthia Crowson

Background

The clinical course of interstitial lung disease (ILD) in systemic sclerosis (SSc) is highly variable–some patients experience progressive loss of lung function while others remain stable. Although risk factors such as early disease, diffuse cutaneous subtype, Black race, and >20% ILD on baseline CT increase the likelihood of progression, ILD progression can also occur in their absence. This study aimed to develop radiomic profiles linked to pulmonary function decline by analyzing quantitative CT measures of lung parenchymal and vascular abnormalities in early SSc.

Methods

A retrospective cohort of adult (≥18 yrs) patients with systemic sclerosis (SSc) seen at an academic center (1/1/2007–12/31/2018) was identified using ICD-9/10 codes. Records were reviewed, and patients included if they met ACR/EULAR 2013 SSc classification criteria or ≥3/5 CREST criteria and had ILD. Inclusion required a baseline high-resolution CT (HRCT) ±2 yrs of SSc diagnosis and a PFT ±6 mo. of HRCT. Patients with infection, pleural effusion, cardiogenic edema, or non-SSc ILD were excluded. CALIPER software quantified six lung features (normal, ground glass opacities (GGO), reticular densities (RD), honeycombing (HC), hyperlucency, and pulmonary vascular related structures (PVRS)) by lung zone (upper/middle/lower, central/peripheral). Each feature was expressed as a % of lung volume for that zone. Percent predicted forced vital capacity (ppFVC) was standardized using the GLI 2022 equations.1 Latent Profile Analysis (LPA) identified radiomic clusters from CALIPER measurements. Mixed effects models estimated annual ppFVC decline by cluster, adjusting for baseline ppFVC, including linear and quadratic effects for the change over time.

Results

Of 1,399 SSc patients identified, 712 had ILD, 315 had a CT ±2 yrs of SSc diagnosis, and 116 met inclusion criteria with ≥1 follow-up PFT. LPA identified two radiomic profiles (LP1 & LP2). LP1 had lower percentages of ILD, GGO, RD, HC, and PVRS (Table 1). There were no significant differences in demographics, smoking history, SSc dx. dur., subtype or other clinical features, anti-Scl70, or anti-centromere Abs (Table 1). RNA Pol III was less frequent in LP1 than LP2 (18% vs. 46%, p=0.048). LP1 had a shorter interval from ILD dx. to HRCT (median 0.0 vs. 0.5 yrs; p< 0.001), and better lung function at baseline (median ppFVC (85% vs. 75%) and ppDLCO (64% vs. 49%), both p< 0.001). In longitudinal analysis, LP2 had a faster rate of ppFVC decline: -2.66% per year (95% CI: –4.65 to –0.67; p=0.011) relative to LP1, adjusting for baseline ppFVC (Table 2, Model 1). This association was slightly attenuated after adjusting for age, sex, ILD dur., Scl-70(+), and diffuse subtype (–2.18% per year; 95% CI: –4.35 to 0.01; p=0.054; Table 2, Model 2; Fig 1)

Conclusions

Two early SSc-ILD radiomic phenotypes were identified. Frequencies of clinical risk factors for ILD progression were similar between profiles. One radiomic profile was associated with greater parenchymal and vascular abnormalities and faster lung function decline. Imaging-based phenotyping using radiomic biomarkers may enhance risk stratification and identify patients at higher risk for ILD progression.

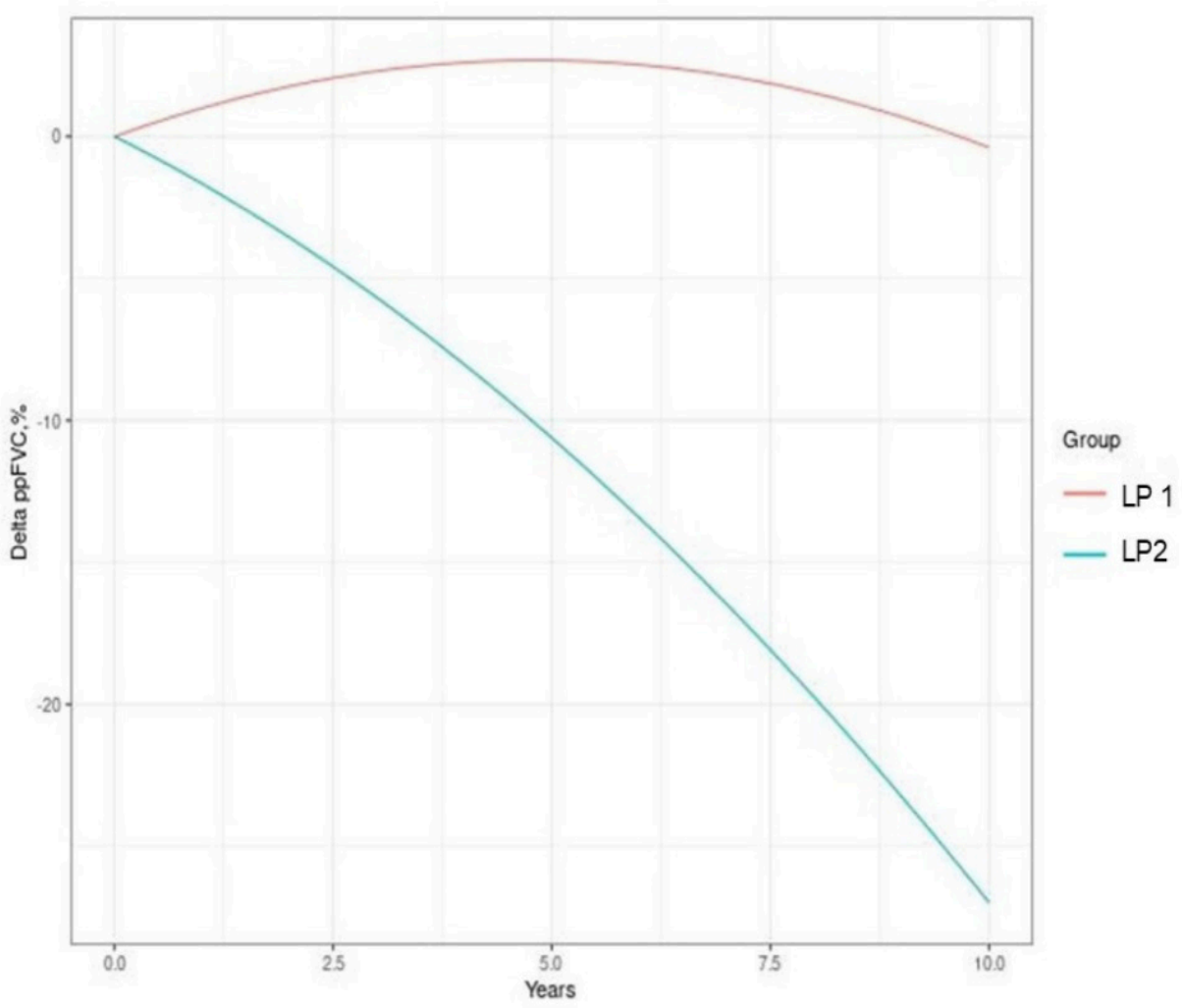


Figure 1. Difference in the Estimated Rate of Decline in percent predicted FVC (ppFVC) per year for Latent Profile (LP) 1 vs. LP 2, adjusting for age, sex, baseline ppFVC, ILD duration, diffuse cutaneous disease, and a positive Scl70

IMPACT OF QRS MORPHOLOGY ON LONG-TERM MORTALITY FOLLOWING CARDIAC RESYNCHRONIZATION THERAPY

Anshul R. Gupta, Nishanth Katukuri, Suganya Karikalan, Fatima Ezzeddine, Freddy Del-Carpio Munoz, Gurukripa Narayan Kowlgi, Christopher DeSimone, Abhishek Deshmukh

Background

Prior studies suggest a poorer response to cardiac resynchronization therapy (CRT) in patients with non left bundle branch block (non-LBBB) QRS morphology in the medium-term vs LBBB. Long-term data are limited.

Methods

We analyzed records of patients who have undergone CRT by guidelines within the Mayo Clinic Enterprise between 2002-2022. Patients with LVEF≤35% pre-implant were included. QRSd & morphology were obtained from reports of the most recent pre-implant ECG. Patients with ventricular pacing reported were excluded. Differences in all cause mortality by QRS morphology were analyzed.

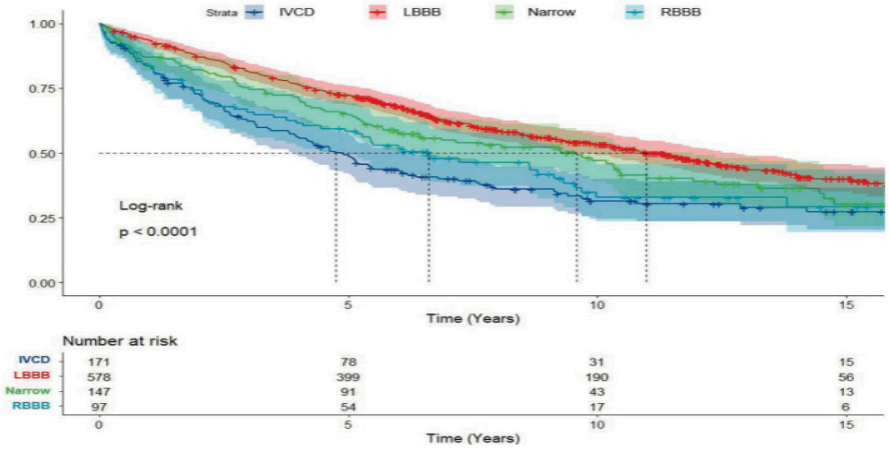
Results

Of the 993 patients included, 58% had LBBB, 17% IVCD, 10% RBBB, & 15% had narrow QRSd (< 120 ms). Survival curves by morphology were significantly different (log-rank $p < 0.0001$), with the lowest mortality among the LBBB group (Fig 1). In univariate analysis, IVCD and RBBB had higher mortality compared to LBBB (HRIVCD 1.76 & HRRBBB 1.54, $p<0.01$), while mortality for narrow-QRS was not significantly different from LBBB (HR 1.25, $p=0.07$). In multivariable analyses accounting for all baseline comorbidities including LVEF, nonischemic/ischemic cardiomyopathy, & QRSd -> compared to LBBB, IVCD but not RBBB or narrow-QRS had higher mortality (HRIVCD1.60 $p<0.001$, HRRBBB 1.24, $p=0.1$, HRnarrow 0.91, $p=0.6$). QRSd was not a significant predictor of mortality.

Conclusions

Among patients with low EF and wide QRS undergoing CRT, long-term all-cause mortality is low-er among patients with LBBB compared to non-LBBB

Figure 1: Post-CRT Kaplan-Meier Curves by QRS Morphology



COVID-19 Infection and New-Onset Ventricular Arrhythmias

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Background

Coronavirus disease 2019 (COVID-19) has been linked to acute and chronic cardiac injury, but its association with incident ventricular arrhythmia (VA) remains undefined. In order to understand this further, the risk of new-onset VA in adults with (COVID-19 +) and without (COVID-19 -) using two large Ame-based cohorts was investigated.

Methods

This retrospective study was conducted using the TriNetX research network. Adults aged 18-60 years without prior arrhythmias were identified during two recruitment periods: January 2020–December 2022 and January 2022–December 2024. COVID-19 + patients were propensity score–matched 1:1 to COVID-19 – on demographics and comorbidities. New incident VAs (ventricular tachycardia (VT) or ventricular fibrillation/flutter) were estimated using hazard ratios (HR) with 95% confidence intervals (CIs).

Results

After matching, 2,375,550 pairs were included in the 2020–2022 cohort and 1,540,761 pairs in the 2022–2024 cohort. The overall incidence of VA in all cohorts was low. However, COVID-19 infecAon was associated with a higher risk of composite VA in both periods (HR 1.93; 95% CI 1.85–2.02 and HR 3.11; 95% CI 2.88–3.35, respecAvely; p<0.01) compared to paAents without prior COVID-19 infecAon. Elevated risks were also observed for VT (HR 1.97; 95% CI 1.88–2.07 and 3.18; 95% CI 2.93-3.44) and ventricular fibrillaAon/fluVer (HR 1.66; 95% 1.49– 1.84 and 2.23; 95% CI 1.87-2.65).

Conclusions

Despite a low overall incidence rate, COVID-19 infection is independently associated with an increased risk for new-onset VA.

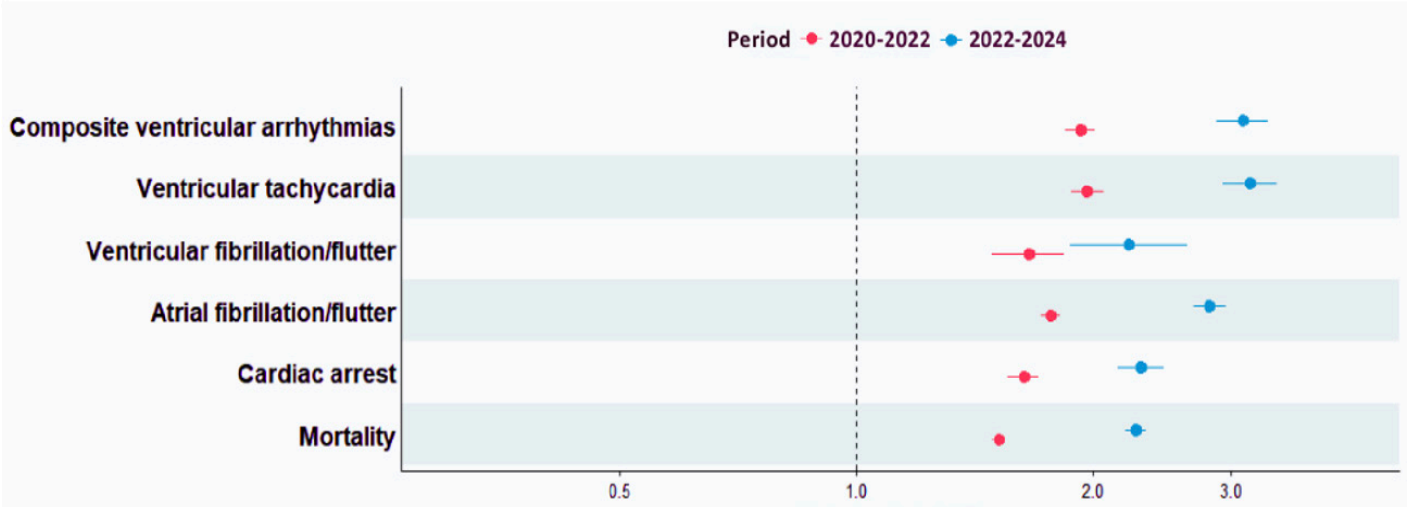

Figure 1. Forest plot displaying hazard ratios (HR) and 95% confidence intervals (CI) for new-onset arrhythmias, cardiac arrest, and mortality in patients with versus without COVID-19 infection after propensity score-matching, stratified by enrollment period (2020–2022 and 2022–2024).

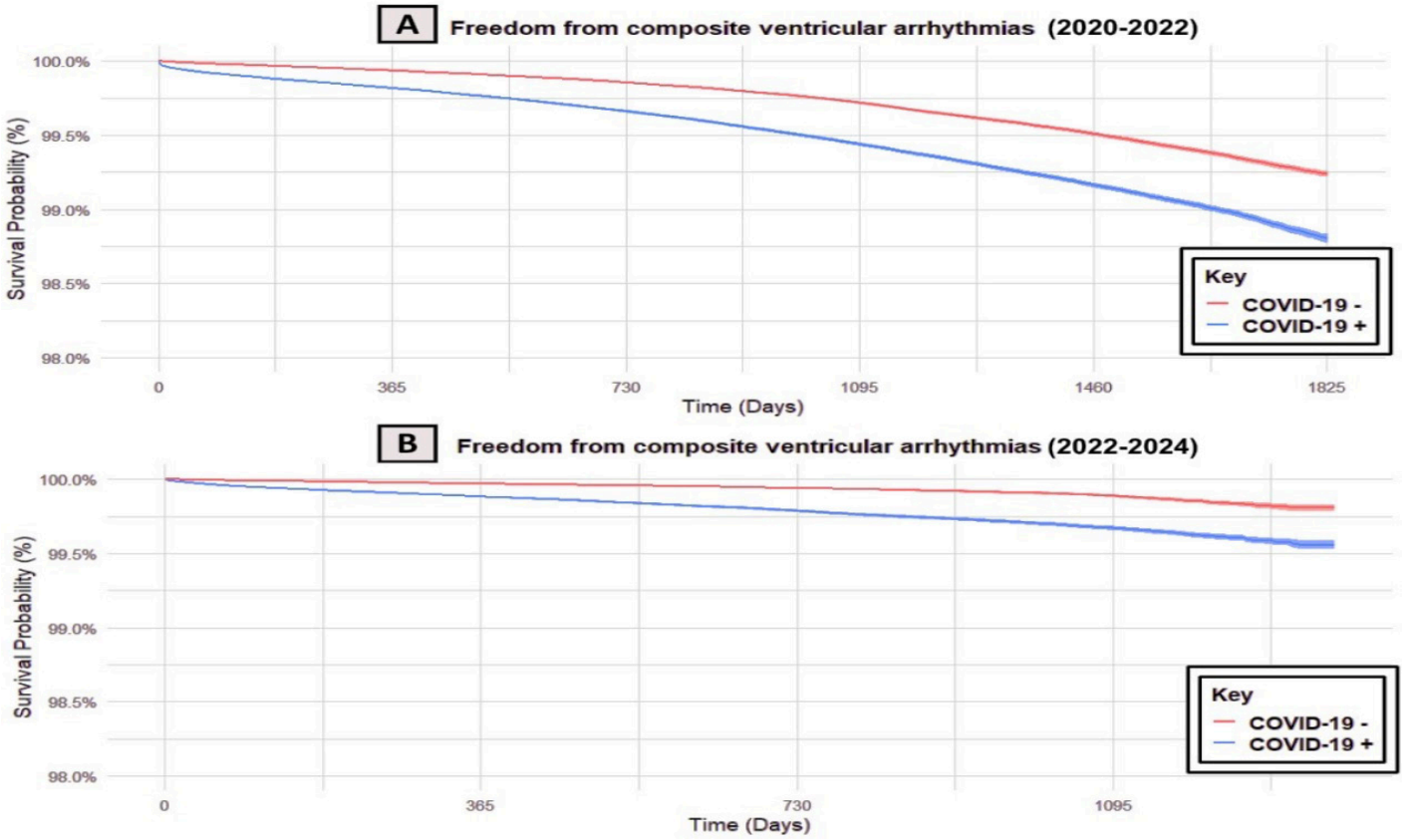

Figure 2. Freedom from composite ventricular arrhythmias in COVID-19 + versus COVID-19 - patients. Kaplan–Meier curves show the cumulative probability of remaining free from ventricular tachycardia, ventricular fibrillation, or ventricular flutter in matched cohorts of patients with (green) and without (red) a history of COVID-19 infection. (A) Outcomes for patients identified between 2020–2022, and (B) Outcomes for patients identified between 2022–2024.

Elevated Body Mass Index as a Predictor of New-Onset Heart Failure After Catheter Ablation for Atrial Fibrillation

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Background

Atrial fibrillation (AF) is the most common sustained arrhythmia and a major contributor to heart failure (HF). Although catheter ablation (CA) reduces HF progression in AF patients, a subset remains at risk for developing HF. Body mass index (BMI) is a known cardiovascular risk factor, but its association with post-ablation HF has not been well defined.

Methods

This retrospective cohort study included patients who underwent first-time CA for AF between 2013 and 2024. Patients with preexisting HF or missing BMI data were excluded. The primary outcome was new-onset HF post-ablation. Multivariable Cox regression was used to identify independent predictors of HF, and Kaplan-Meier analysis assessed HF-free survival across BMI categories.

Results

Of 7,363 eligible patients, 550 (7.5%) developed new-onset HF during a mean follow-up of 3.62 ±2.89 years. Patients who developed HF were older (mean 67.5±10.1 vs. 64.4±10.2 years) and more likely to be female (39.5% vs. 31.8%). HF-free survival declined progressively with increasing BMI (Figure 1). At 5 and 10 years post-ablation, HF-free survival was 96.7% and 94.2% for BMI <25; 96.1% and 93.3% for BMI 25–29.99; 95.3% and 91.9% for BMI 30–34.99; 93.4% and 89.0% for BMI 35–39.99; and 91.8% and 86.3% for BMI ≥40. In multivariable Cox regression (Figure 2), older age, particularly >75 years, strongly predicted post-ablation HF (HR [CI]:2.55 [2.10–3.09], p<0.001). Additional independent predictors included female sex (HR [CI]:1.41 [1.16–1.73], p<0.001), hypertension (HR [CI]: 1.28 [1.03–1.59], p=0.02), ischemic heart disease (HR: 1.44 [1.19–1.74], p<0.001), mitral regurgitation (HR [CI]:2.60 [2.07-3.27], p<0.001), aortic stenosis (HR [CI]:1.97 [1.38-2.80], p<0.001), pulmonary hypertension (HR: 3.02 [2.26-4.050], p<0.001), pulmonary embolism (HR [CI]: 1.99 [1.23-3.21], p<0.001), and eGFR <60 mL/min (HR [CI]: 2.51 [1.87-3.37], p<0.001). Higher BMI also showed a graded increase in risk compared to BMI <25. BMI 30-34.99 (HR [CI]: 1.35[1.04-1.79], p=0.02), BMI 35-39.99 (HR [CI]: 1.68 [1.23-2.28] p<0.001), BMI ≥40 vs BMI <25 (HR [CI]: 2.31[1.56-3.41], p<0.001)

Conclusions

Elevated BMI is a strong modifiable independent predictor of new-onset HF following AF ablation, with risk rising progressively across higher BMI categories. Interventions aimed at reducing BMI may play an important role in lowering HF risk and improving long-term outcomes in patients with AF.

Subtle Increases in CALIPER Quantified Volumes of Ground Glass Opacities, Reticular Densities, and Pulmonary Related Vascular Structures on Baseline CT Associate with Increased Transplant/Mortality Risk in Systemic Sclerosis Associated Interstitial Lung Disease

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Introduction

Interstitial lung disease (ILD) affects ~50% of patients with systemic sclerosis (SSc) and is a leading cause of mortality. Visual assessment of ILD extent and morphologies, including ground-glass opacities (GGO) and reticular densities (RD), suffers from poor interobserver agreement, limiting prognostic consistency. CALIPER Quantitative CT (QCT) software provides reproducible volumetric measures of parenchymal and vascular features. This study evaluated baseline QCT-derived lung features for association with transplant/mortality risk in pwSSc-ILD.

Methods

A retrospective cohort of SSc patients (≥18 years) seen at an academic center from 2007-2018 was identified using ICD codes, with ACR/EULAR 2013 SSc criteria confirmed by chart review. Inclusion required ILD on high-resolution CT (HRCT) ±2 years of SSc diagnosis, and PFTs ±6 months of HRCT. CALIPER quantified volumes of normal lung, GGO, RD, hyperlucency, honeycombing (HC), and pulmonary vascular-related structures (PVRS), and expressed as percentages of total lung volume. Right heart catheterization confirmed pulmonary hypertension (PH) defined by 2022 ESC/ERS criteria (Eur Heart J, 2022). Cox hazards models assessed associations with combined mortality/transplant outcome, a priori adjusted for age, sex, diffuse SSc subtype, ILD duration, and PH (Column B), and further for baseline ppFVC and ppDLCO (Column C)(Table 1).

Results

Of 132 SSc-ILD patients, median SSc and ILD durations at HRCT were 1.4 (0.6, 2.4) and 0.0 (0.0, 0.5) years. Median feature percentages: total ILD 13.0% (IQR: 6.4, 21.0), GGO 10.2% (4.6, 16.9), RD 1.9% (0.8, 3.7), HC 0.03% (0.00, 0.09), PVRS 3.2% (2.3, 4.1). Median ppFVC was 81.1% (69.4, 92.6), and ppDLCO 60.0% (46.0, 75.7); 21 patients had PH. There were 2 transplants and 45 deaths. Every 5% increase in baseline total ILD and GGO associated with a 22% (HR 1.22; 95% CI 1.12–1.33) and 24% (1.24; 1.12–1.36) higher risk of transplant/mortality on unadjusted models (Column A), respectively, remaining significant after a priori (CB) and full adjustment (CC)(Table 1). Every 1% increase in RD and PVRS conferred 19% (1.19; 1.08–1.31) and 33% (1.33; 1.08–1.63) higher risk of transplant/mortality in unadjusted models (CA); RD retained significance after a priori adjustment (1.17; 1.03–1.33), while PVRS trended non-significant after full adjustment.

Conclusions

In early SSc-ILD, QCT-derived GGO, RD, and PVRS provide robust prognostic value for mortality/transplant risk assessment, with baseline severity increases between 1-5%—at or below visual detection thresholds—associating with clinically meaningful risk increases. These findings support integrating baseline QCT biomarkers into risk stratification beyond traditional clinical and PFT measures.

Table 1. Cox Hazards Models Determining the Association Between Lung Parenchymal Abnormalities and Vascular Features and Risk of Transplant/Mortality, unadjusted (Column A) and adjusted for *a priori* features (Column B) and *a priori* features, ppFVC, and ppDLCO (column C)*

	Column A Univariable		Column B Univariable Adjusted for *A Priori* Clinical Features[a]		Column C Univariable Adjusted for *A Priori* Clinical Features,[a] ppFVC and ppDLCO[b]	
	HR (95% CI)		HR (95% CI)		HR (95% CI)	
HRCT						
Total ILD% (per 5%)	1.22 (1.12 - 1.33)	<0.001	1.19 (1.08 - 1.31)	<0.001	1.14 (1.02 - 1.27)	0.023
GGO% (per 5%)	1.24 (1.12 - 1.36)	<0.001	1.21 (1.08 - 1.35)	<0.001	1.15 (1.01 - 1.30)	0.028
RD% (per 1%)	1.19 (1.08 - 1.31)	<0.001	1.17 (1.03 - 1.33)	0.014	1.14 (0.99 - 1.31)	0.08
PVRS% (per 1%)	1.33 (1.08 - 1.63)	0.007	1.23 (0.95 - 1.60)	0.12	1.17 (0.86 - 1.59)	0.32
***A Priori* Features**						
Age at HRCT, yrs	1.07 (1.04 - 1.10)	<0.001	1.06 (1.03 - 1.10)	<0.001		
Female Sex	0.65 (0.36 - 1.19)	0.16	0.71 (0.37 - 1.35)	0.30		
Diffuse cutaneous	0.72 (0.37 - 1.38)	0.32	0.76 (0.39 - 1.49)	0.43		
ILD dur. at HRCT, yrs[c]	0.99 (0.92 - 1.07)	0.84	0.97 (0.90 - 1.04)	0.39		
Any PH (td)[d]	6.88 (3.82 - 12.41)	<0.001	6.22 (3.39 - 11.38)	<0.001		
Baseline PFT						
ppFVC (per 5%)	0.95 (0.88 - 1.03)	0.24	0.93 (0.85 - 1.03)	0.18		
ppDLCO[b] (per 5%)	0.85 (0.79 – 0.92)	<0.001	0.87 (0.78 - 0.96)	0.006		

*Each feature was fit in its own model, and adjusted for *a priori* clinical features[a] (Column B) and further adjusted for baseline ppFVC and ppDLCO (Column C).
a. *a priori* features: age at HRCT, sex, diffuse cutaneous subtype, log2 ILD to HRCT (years), any PH by RHC (time-dependent covariate)
b. missing values imputed using median ppDLCO .
c. logarithmically transformed (base 2[T + 1day]) to account for skewed distribution.
d. Includes pre-capillary, post-capillary, and combined pre-/post-capillary PH (Humbert, M., Eur Heart J, 2022).
CI: Confidence Interval; GGO: ground glass opacities; HR: Hazard Ratio; HRCT: high-resolution computed tomography; ILD: Interstitial Lung Disease; PH: pulmonary hypertension; ppDLCO: percent predicted diffusing lung capacity of the lung for carbon monoxide; ppFVC: percent predicted forced vital capacity; PVRS: pulmonary vascular related structures; RD: reticular densities; RHC: right heart catheterization; td: time-dependent

Comparative Outcomes After Atrial Fibrillation Catheter Ablation in Patients with Cardiac Amyloidosis: A Multicenter Propensity-Matched Analysis

Ahmed K Mahmoud MD, Ramzi Ibrahim MD, Hoang Nhat Pham MD Mohammed Salih MD, Justin Z Lee MD, Amin Al Ahmad MD, Luis R Scott MD, Dan Sorajja MD, Richard Patten MD

Introduction:

Atrial fibrillation (AF) is common in patients with transthyretin amyloid cardiomyopathy (ATTR-CM) due to amyloid infiltration and atrial fibrosis, complicating AF management. Although AF ablation has been studied within ATTR-CM populations, comparative outcomes between patients with and without ATTR-CM remain unclear.

Methods

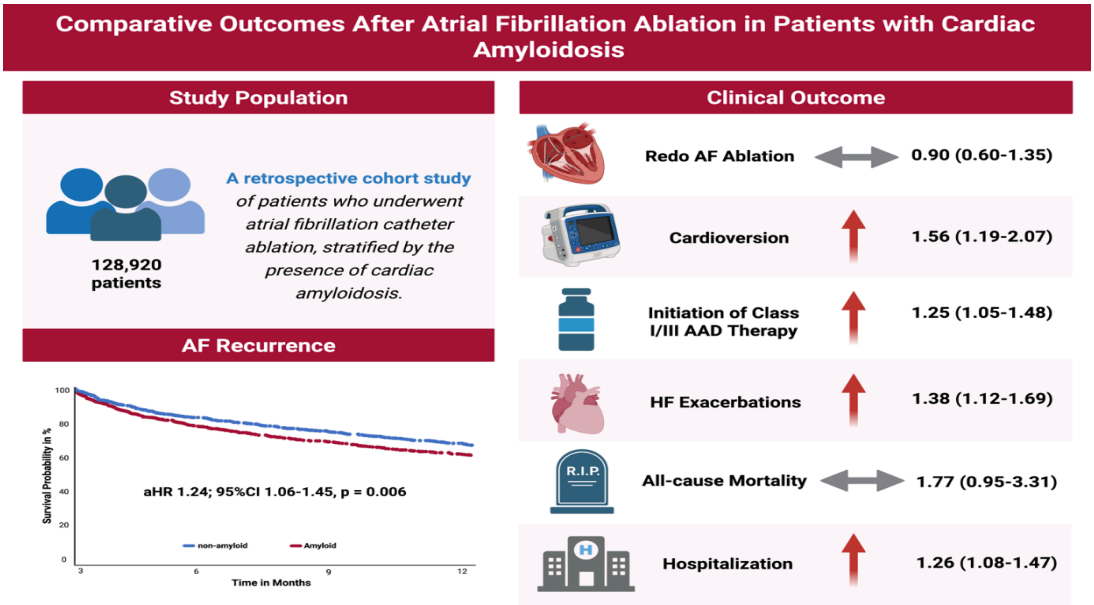
Adults undergoing AF ablation from 2010 to 2024 were identified and divided into ATTR-CM and non- ATTR-CM cohorts. Propensity score matching (1:1) balanced demographics, comorbidities, labs, and medications. The primary composite outcome included cardioversion, initiation of class I/III antiarrhythmics, or repeat ablation between 3-12 months post-procedure. Secondary outcomes included individual components, acute heart failure exacerbations (AHF), hospitalizations, and mortality. Statistical analyses involved chi-square, t-tests, Cox regression, and Kaplan-Meier survival curves.

Results

After matching, 962 patients per cohort were analyzed (mean age 71, 23% female). The ATTR-CM cohort had higher rates of the composite outcome (37.2% vs. 29.3%, aHR 1.24; p=0.006), cardioversion (13.7% vs. 8.3%, p=0.001), antiarrhythmic initiation (30.8% vs. 23.9%, p=0.012), AHF (22.5% vs. 15.5%, p=0.003), and hospitalizations (39.5% vs. 30.7%, p=0.003).

Conclusions

Careful risk stratification is critical in ATTR-CM patients undergoing AF ablation to optimize management and outcomes.



COMPARATIVE OUTCOMES OF GLP1 RECEPTOR AGONISTS AND SGLT2 INHIBITORS AFTER CABG IN PATIENTS WITH TYPE 2 DIABETES

Navya Pillikunte Doddareddy, Ahmed Mahmoud, Ibrahim Kamel, Ranjit Sah, Adham Ramadan, Archit Srivastava, Benjamin Horn

Background

Type 2 diabetes raises cardiovascular risk, often leading to CABG. GLP-1 receptor agonists and SGLT2 inhibitors provide benefits, but their relative effects post-CABG are unclear. Clarifying this could improve treatment in high-risk patients.

Methods

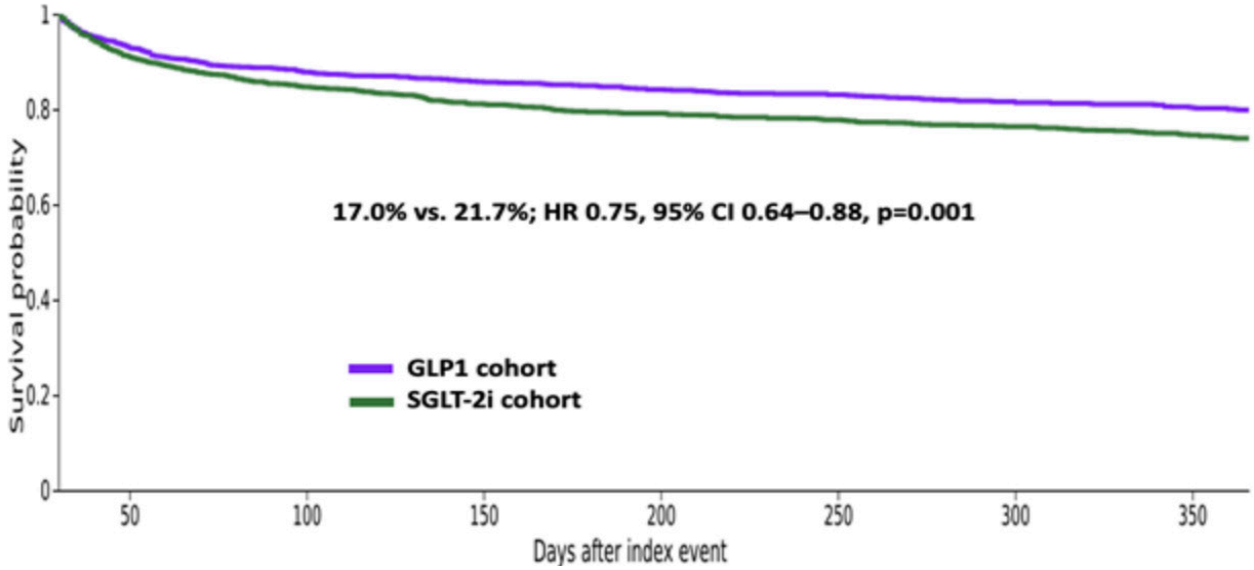
Using the TriNetX Research Network, we identified adults with T2DM who underwent CABG from 2010 to 2024. Two cohorts were formed: GLP-1 RA users without SGLT2i use and SGLT2i users without GLP-1 RA use. Propensity score matching (1:1) balanced demographics, comorbidities, medications, and labs. Outcomes at 1 year post-CABG included MACE, mortality, and repeat revascularization. Hazard ratios (HRs) with 95% confidence intervals (CIs) were calculated via Cox regression.

Results

After matching, each group had 1,569 patients; baseline characteristics were balanced (mean age 64, 30% female). GLP-1 RA use lowered MACE risk versus SGLT2i (17.0% vs 21.7%; HR 0.75, CI 0.64–0.88, p=0.001) (Fig 1) and reduced all-cause mortality (2.5% vs 3.8%; HR 0.66, CI 0.44–0.98, p=0.04). Repeat revascularization rates were similar (2.2% vs 2.5%; HR 0.88, CI 0.56–1.38, p=0.64).

Conclusions

GLP-1 RAs were linked to lower cardiovascular events and mortality vs. SGLT2is in diabetic patients post-CABG. Further studies should confirm these findings.



Timing of Impella Implantation After ECMO in Acute Myocardial Infarction Cardiogenic Shock

Adham Ramadan, MD, Mohamed Doma, MD, Ibrahim Kamel, MD, MHA, Ahmed Mahmoud, MD, Arturo Giacaman Saavedra, MD, Ahmad Jabri, MD, Raneem Atta, MD, Michael Megaly, MD, Mir Babar Basir, MD, Andrew M. Goldsweig, MD, Pedro A. Villablanca, MD

Background

Mechanical circulatory support devices such as extracorporeal membrane oxygenation (ECMO) are utilized for stabilizing patients with acute myocardial infarction complicated by cardiogenic shock (AMI-CS). The optimal timing of adjunctive Impella implantation in this setting remains unknown.

Methods

Using the TriNetX Research Network, we identified 1,273 patients with AMI-CS supported with ECMO between 2015 and 2025. Propensity score matching yielded 242 pairs for same-day vs 1 day, 185 pairs for same-day vs 2 days, 151 pairs for same-day vs 3 days, 181 pairs for 1 vs 2 days, 150 pairs for 1 vs 3 days, and 149 pairs for 2 vs 3 days. Cox proportional hazard model was used to estimate hazard ratios (HR) with 95% confidence intervals (CIs).

Results

At 1 month, same-day Impella implantation was associated with a higher incidence of acute kidney injury compared with 2-day (HR 1.44; 95% CI 1.07-1.94) and 3-day implantation (HR 1.41; 95% CI 1.02-1.96). At 6 months and 1 year, same-day implantation was associated with a higher risk of all-cause hospitalization compared with 2-day implantation (HR 1.35; 95% CI 1.01-1.82) and (HR 1.34; 95% CI 1.02-1.80), respectively. No significant differences were observed in all-cause mortality (see figure), stroke, or peripheral limb ischemia at any time point.

Conclusions

In patients with AMI-CS on ECMO, timing of Impella implantation within the first three days was not associated with significant differences in long-term mortality or major complications.

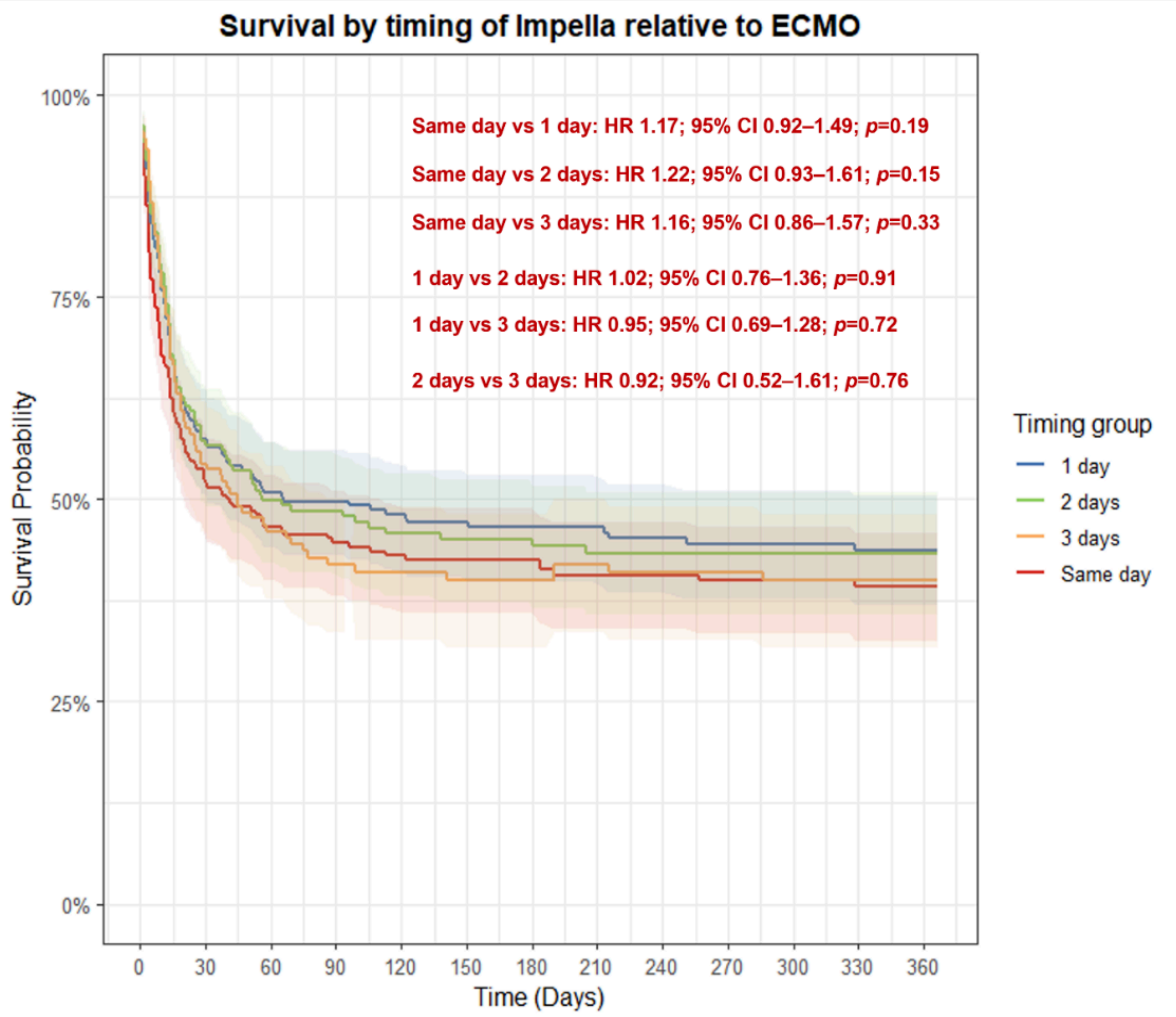


Figure. Kaplan–Meier survival curves showing one-year outcomes according to the timing of Impella implantation relative to extracorporeal membrane oxygenation (ECMO) in patients with acute myocardial infarction and cardiogenic shock. Shaded areas indicate 95% confidence intervals.

Diagnostic Accuracy of Artificial Intelligence enhanced Electrocardiogram for the Detection of Myocardial Infarction; a Systematic Review and Meta-analysis.

Ranjit Sah, Abhigan Babu Shrestha, Navya Pillikunte
Doddareddy, Tungki Pratama Umar, Aakash Pandit, Aman Shah, MelishaKoirala, Anuj Subedi

Background

Acute myocardial infarction (AMI) remains a major cause of morbidity and mortality worldwide. Early diagnosis is essential because delays in reperfusion therapy are associated with increased mortality. Recently, artificial intelligence (AI) enhanced ECG analysis has emerged as a promising approach for diagnosing.

Methods

A systematic search from PubMed, Google Scholar, Cochrane Library, and ScienceDirect was conducted from inception to October, 2025. Studies evaluating AI-enhanced ECG models with external validation in patients with STEMI and/or NSTEMI were included. Diagnostic meta-analysis was conducted using MetaDTA v2.1.51, calculating pooled sensitivity, specificity, diagnostic odds ratio (DOR), and area under the curve (AUC).

Results

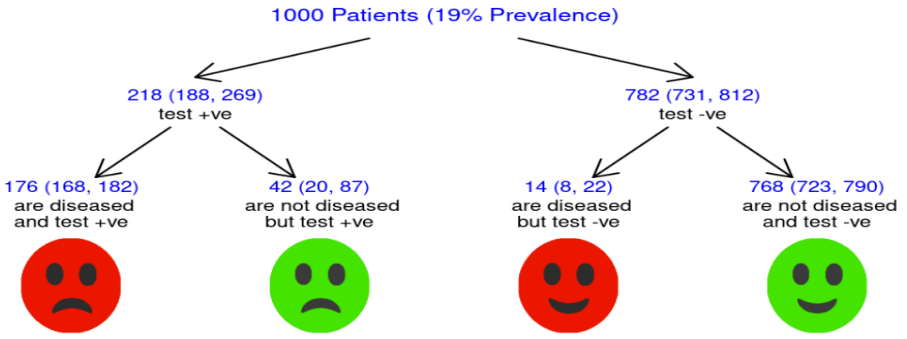
Fifteen studies were included for the analysis with average age of 62 years and 60.5% males. The pooled prevalence of myocardial infarction was 19% (Figure 1A). For AMI detection, pooled sensitivity and specificity were 82% (95% CI: 77–85%) and 93% (95% CI: 87–96%), respectively, with a DOR of 54.52 (95% CI: 24.71 to 120.33) and an AUC of 0.881 (Fig 1B). STEMI detection showed the highest diagnostic accuracy, with sensitivity of 92.9% (95% CI: 88.4%–95.7%), AUC of 0.979 and diagnostic odds ratio/DOR of 235.606 (95% CI: 87.017%–637.926%). In contrast, NSTEMI detection showed lower sensitivity; 69% (95% CI: 48%–82%), specificity; 86% (95% CI: 67%–93%) and diagnostic odds ratio/DOR of 12.924 (95% CI: 3.335 to 40.955).

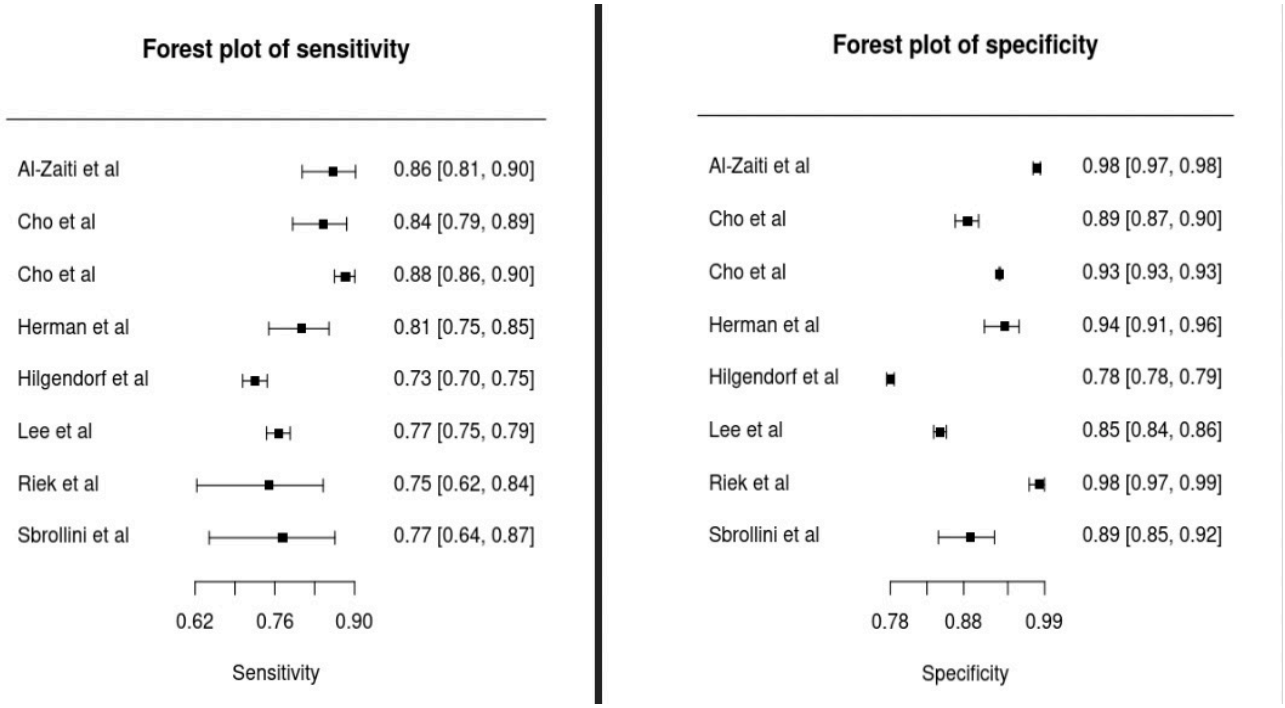
Conclusions

AI-enhanced ECG interpretation demonstrates strong diagnostic performance, particularly for STEMI detection, and may improve early identification of AMI. However, more prospective studies with large sample size must be established to validate the results and decision for clinical applicability.

Figure 1A

Meta Prevalence





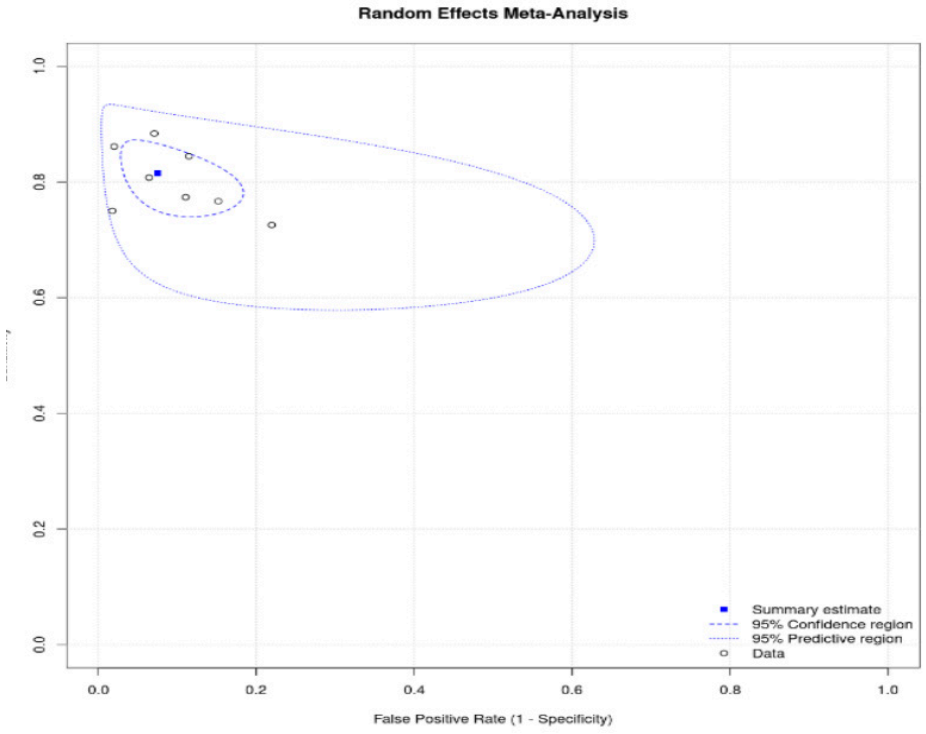


Figure 1B. AI-based ECG for AMI-OMI

Impact of Evolocumab on LDL-Cholesterol and Cardiovascular Outcomes in Patients with Established CVD: Systematic Review and Meta-Analysis

Anika Goel, Muhammad Abdullah Naveed, Hemeesh Tandel, Muhammad Mukhl, K. Sai Varun Reddy, Arun Kumar Maloth, Ameer Awashra, Sourav Sudan, Rahul Singla, Amogh Verma, Navya Pillikunte Doddareddy, Ranjit Sah

Introduction

Atherosclerotic cardiovascular disease (ASCVD) remains the leading global cause of morbidity and mortality, despite the widespread use of contemporary pharmacologic therapies. Elevated low-density lipoprotein cholesterol (LDL-C) is a causal factor in ASCVD, and its reduction proportionally decreases cardiovascular risk. However, many high- and very-high-risk patients fail to achieve guideline-recommended LDL-C targets on statins alone, thereby carrying substantial residual risk.

Methods

We systematically searched PubMed, Scopus, Embase, Cochrane CENTRAL, and clinical trial registries up to April 2025 for randomized controlled trials (RCTs) comparing evolocumab with placebo or standard therapy in adults with established cardiovascular disease (CVD) [Fig. 1A]. Primary outcomes included changes in lipid parameters [total cholesterol, low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), triglycerides, and lipoprotein(a)], as well as incidence of major adverse cardiovascular events (MACE: myocardial infarction, stroke, and cardiovascular death). Secondary outcomes were individual cardiovascular endpoints, all-cause mortality, and safety events. Risk ratios (RRs) and mean differences (MDs) with 95% confidence intervals (CIs) were pooled using random-effects models.

Results

Nine RCTs enrolling 67,662 patients were included. Evolocumab significantly reduced LDL-C (MD −57.80 mg/dL; 95% CI −60.41 to −55.18; P <0.00001), total cholesterol (MD −51.81 mg/dL; 95% CI −62.46 to −41.15) [Fig. 1B], and triglycerides (MD −21.16 mg/dL; 95% CI −28.02 to −14.30), while modestly increasing HDL-C (MD 3.63 mg/dL; 95% CI 1.50–5.76). Lipoprotein(a) was also reduced (MD −10.97 mg/dL; 95% CI −22.42 to −0.48). Evolocumab lowered MACE risk (RR 0.45; 95% CI 0.22–0.94), largely due to reductions in myocardial infarction (RR 0.74; 95% CI 0.67–0.82; P <0.00001) and coronary revascularization (RR 0.80; 95% CI 0.74–0.86; P <0.00001). No significant differences were observed for cardiovascular mortality, stroke, or unstable angina. Evolocumab showed a favorable safety profile, with no increase in serious adverse events, neurocognitive effects, or new-onset diabetes, although injection-site reactions were more frequent.

Conclusion

In patients with established CVD, evolocumab produces profound LDL-C lowering and reduces ischemic events, particularly myocardial infarction and need for revascularization, without major safety concerns. These findings support evolocumab as a valuable adjunct to statins in secondary prevention. Future studies should address long-term cost-effectiveness and refine patient selection strategies.

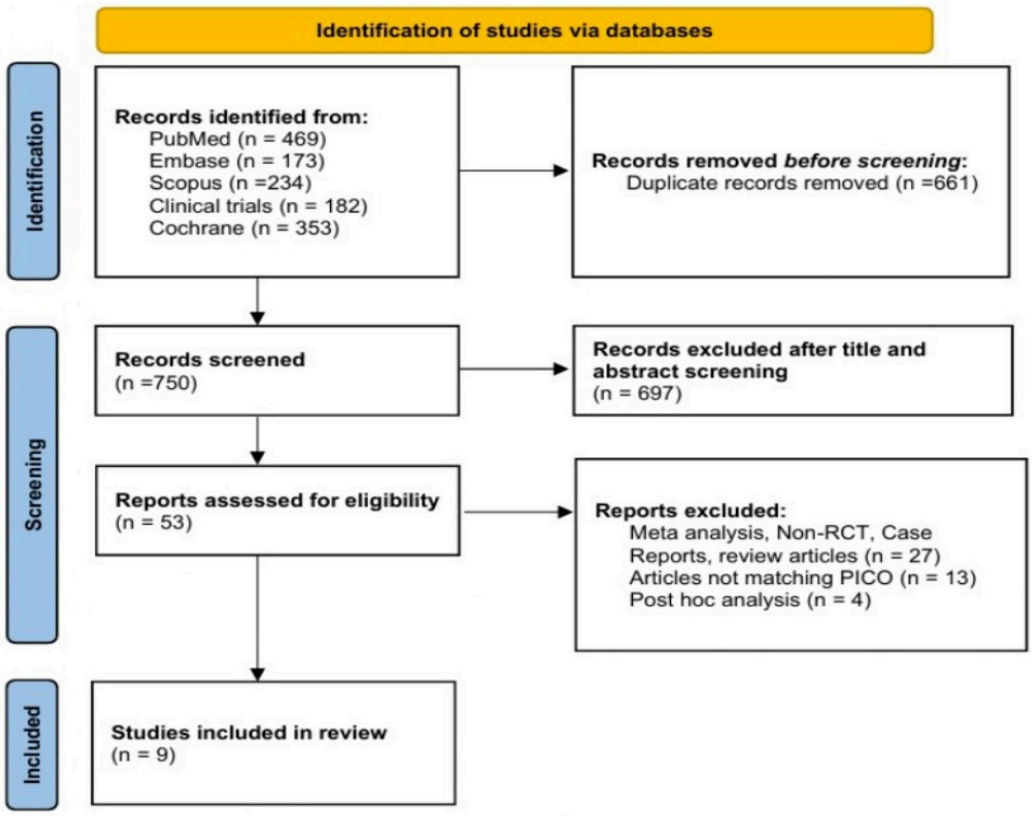
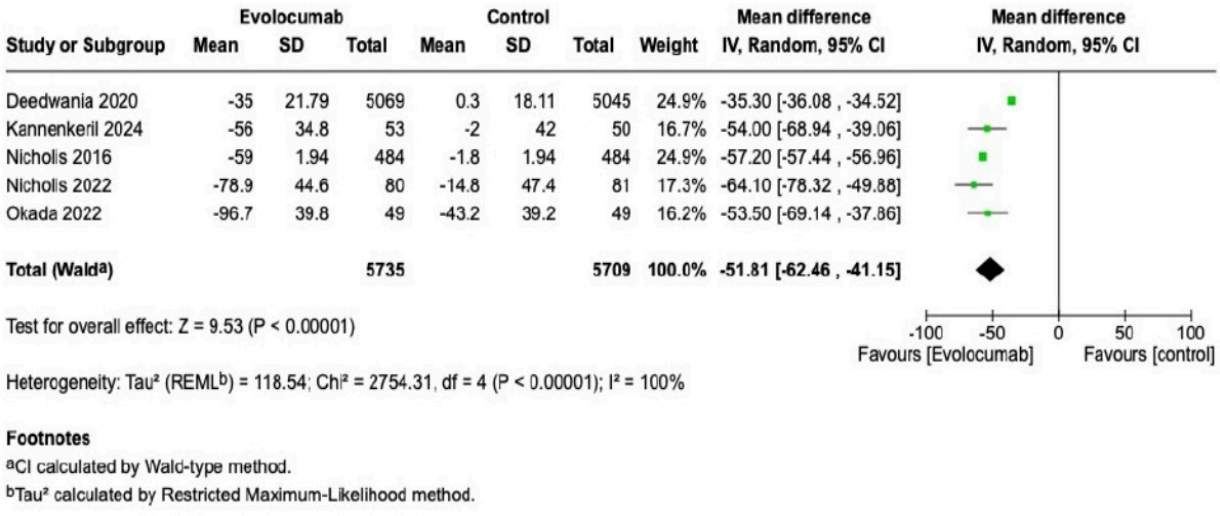


Figure 1A. PRISMA flow diagram



Study or Subgroup	Evolocumab Mean	SD	Total	Control Mean	SD	Total	Weight	Mean difference IV, Random, 95% CI
Deedwania 2020	-35	21.79	5069	0.3	18.11	5045	24.9%	-35.30 [-36.08 , -34.52]
Kannenkeril 2024	-56	34.8	53	-2	42	50	16.7%	-54.00 [-68.94 , -39.06]
Nicholis 2016	-59	1.94	484	-1.8	1.94	484	24.9%	-57.20 [-57.44 , -56.96]
Nicholis 2022	-78.9	44.6	80	-14.8	47.4	81	17.3%	-64.10 [-78.32 , -49.88]
Okada 2022	-96.7	39.8	49	-43.2	39.2	49	16.2%	-53.50 [-69.14 , -37.86]
Total (Wald[a])			**5735**			**5709**	**100.0%**	**-51.81 [-62.46 , -41.15]**

Mean difference IV, Random, 95% CI

-100 -50 0 50 100

Favours [Evolocumab] Favours [control]

Test for overall effect: Z = 9.53 (P < 0.00001)

Heterogeneity: Tau² (REML[b]) = 118.54; Chi² = 2754.31, df = 4 (P < 0.00001); I² = 100%

Footnotes

[a]CI calculated by Wald-type method.

[b]Tau² calculated by Restricted Maximum-Likelihood method.

Figure 1B. Forest plot showing changes in total cholesterol level.

Left Atrial Strain Impairment in Embolic Stroke of Undetermined Source: A Systematic Review and Meta-Analysis

Ranjit Sah, Sangam Shah, Navya Pillikunte Doddareddy, Rachana Mehta, Sanjit Sah, Harinder Singh

Background

Embolic stroke of undetermined source (ESUS) accounts for nearly one-third of all ischemic strokes. Growing evidence indicates that atrial cardiomyopathy, rather than paroxysmal atrial fibrillation (AF) alone, may cause a significant portion of ESUS. Left atrial (LA) strain imaging, which measures mechanical function before visible enlargement, provides a sensitive indicator of atrial myopathy. This systematic review and meta-analysis aimed to compile current evidence on LA strain parameters in ESUS.

Methods

A comprehensive search of PubMed, Scopus, Embase, and the Cochrane Library was conducted from inception through July 2025, following PRISMA 2020 guidelines. Eligible studies included adult ESUS patients and reported quantitative LA strain parameters—reservoir (LASr), conduit (LAScd), and contractile (LASct)—measured by speckle-tracking echocardiography (STE) or cardiac magnetic resonance (CMR). Random-effects models (DerSimonian–Laird) were used to pool mean differences (MD) between ESUS and control or non-cardioembolic cohorts. Study quality was assessed using the Newcastle–Ottawa Scale.

Results

Seven studies met the inclusion criteria, with four providing quantitative data for meta-analysis (approximately 834 participants). Compared to controls, ESUS patients showed significantly lower LASr (MD = −5.92%, 95% CI −8.82 to −3.02) [Fig.1] and LAScd (MD = −3.42%, 95% CI −6.21 to −0.64). LASct exhibited a non-significant downward trend (MD = −1.59%, 95% CI −3.62 to 0.45). Methodological heterogeneity was moderate, but all studies were of high quality (NOS ≥ 7). Qualitative analysis indicated that reduced LASr was linked to later AF detection and represented subclinical atrial dysfunction that precedes chamber enlargement.

Conclusions

ESUS patients show consistent impairment in LA reservoir and conduit strain, supporting atrial cardiomyopathy as a sig-

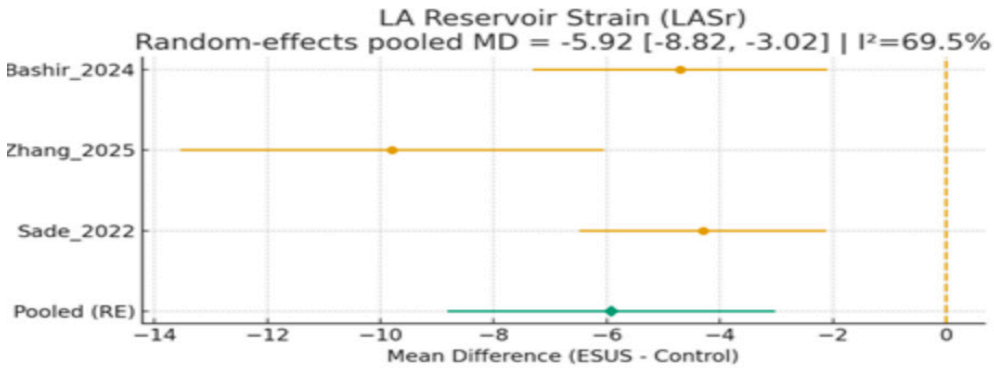


Figure 1. Pooled analysis of left atrial reservoir strain (LASr) in ESUS versus controls.

Artificial Intelligence in Psychiatry Education: Assessing Model Accuracy and Student Preferences

River Grace MD, Helen Kyomen MD, MS

Boston Medical Center Brighton, Department of Psychiatry

Background

Generative artificial intelligence (AI) is increasingly used in medical education, but factual accuracy and perceived educational value may not align. This tension is especially pertinent in unsupervised learning settings, where little research has yet been conducted. We aim to compare answer accuracy and learner-perceived usefulness of AI-generated versus human-written explanations for psychiatry shelf exam-style questions, using psychiatry as an initial proving-ground specialty to inform broader study of AI-assisted medical education.

Methods

We evaluated 3 open-access AI chatbots available at the time of initial pre-pilot data collection. Each model was prompted with 50 published clinical psychiatry shelf exam questions and asked to identify the correct answer and explain it at the level of a third-year medical student. Model accuracy was compared with the human expert-written answer key. For AI responses that were correct, AI-generated explanations were paired with corresponding human-written explanations from the answer key and presented in blinded fashion to 79 medical students. Students selected the explanation they found more useful for learning and provided free-text rationale for their choices.

Results

Model accuracy ranged from 50% to 80%. AI-generated explanations were shorter than human-written explanations and more often used chunked information formats such as bullets or numbered sections. Students showed no clear preference between AI-generated and human-written explanations. Students' free-text responses suggested that AI explanations were often valued for clarity and ease of understanding, whereas human explanations were preferred for greater depth and detail.

Conclusions

In this pre-pilot study, learners rated accurate AI-generated explanations as comparably useful to human-written explanations despite inconsistent overall model accuracy. Together, these findings suggest that information accessibility and clarity may influence perceived educational value even when system-level reliability remains limited. These preliminary findings informed the design of a subsequent prospective study of trust, calibration, and faculty oversight in AI-assisted medical education.

Impact of Tafamidis on Stroke Risk in ATTR Cardiac Amyloidosis with Atrial Fibrillation on DOAC Therapy

Ahmed K. Mahmoud MD, Ibrahim Kamel MD, MHA, Adham Ramadan MD, Benjamin Horn DO, Richard Patten MD

Background

Atrial fibrillation (AF) frequently complicates transthyretin cardiac amyloidosis (ATTR-CA), and anticoagulation is essential to mitigate thromboembolic risk. The introduction of tafamidis has improved survival in ATTR-CA, but its influence on AF-related stroke among patients receiving direct oral anticoagulants (DOACs) is uncertain.

Methods

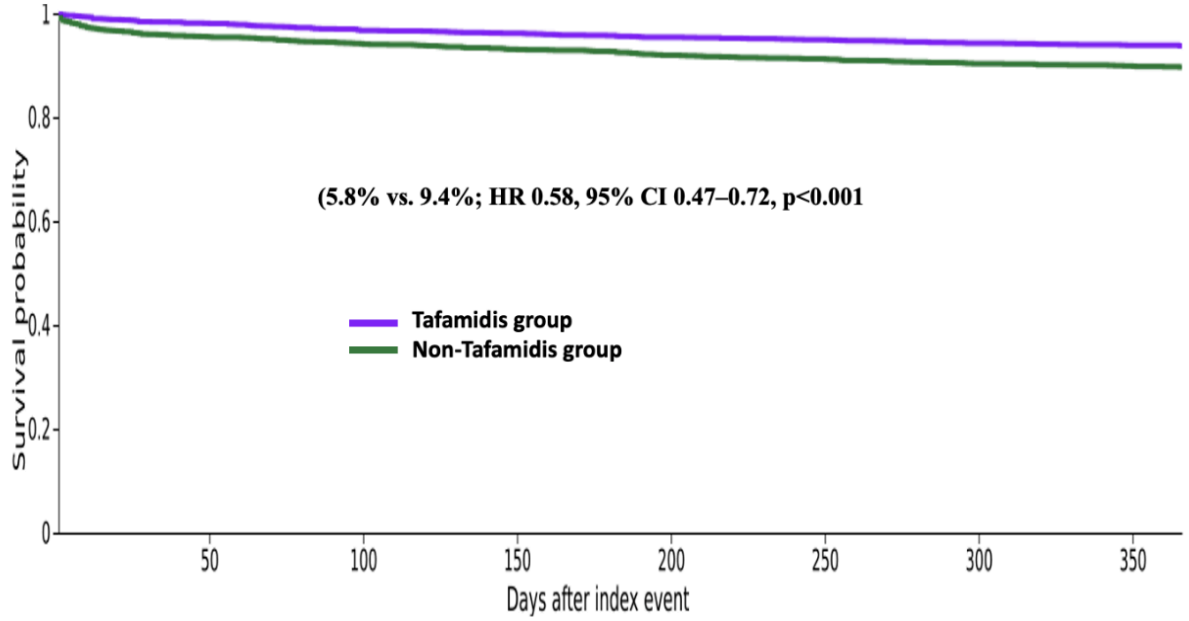
Using the TriNetX Research Network, we identified adults with ATTR-CA and AF treated with DOACs between 2014-2024. Patients were divided into two groups: (1) tafamidis users and (2) non-users. Propensity score matching (1:1) was performed to balance demographics, comorbidities, and medications. Ischemic stroke outcome at 12 months was captured. Cox regression models estimated hazard ratios (HRs) with 95% confidence intervals (CIs).

Results

After matching, 4,886 patients, 2,443 patients per group were included. Cohorts were well balanced (mean age 79 years, 16% female). Tafamidis use was associated with lower risk of ischemic stroke (5.8% vs. 9.4%; HR 0.58, 95% CI 0.47-0.72, p<0.001) (Figure 1).

Conclusions

In patients with ATTR-CA and AF on DOAC therapy, tafamidis use was associated with significant reduction in ischemic stroke risk. These findings suggest tafamidis may protect this population beyond transthyretin stabilization alone.



Winner: 1st Place

Quality Improvement Initiative to Improve LDL-C Screening and Antilipemic Therapy Escalation in ACS Patients

Ziad Qadadeh1 MD, Michael Goddu1 MD, Tariq Emaish1 MD, Bilawal Nadeem1 MD, Joseph Carrozza2 MD

1Department of Internal Medicine, 2Department of Cardiovascular Medicine, BMC- Brighton, BMC Health System, Boston, MA

Introduction

Patients with Acute Coronary Syndrome (ACS), including ST-elevation myocardial infarction (STEMI), non-ST-elevation myocardial infarction (NSTEMI) and unstable angina, are at high risk for recurrent cardiovascular events and require aggressive lipid management for secondary prevention. This quality improvement project aimed to increase rates of inpatient low-density lipoprotein cholesterol (LDL-C) screening and appropriate escalation of lipid-lowering therapy (targeting LDL-C <55 mg/dL) in patients admitted with ACS to our hospital.

Methods

A pre- and post-intervention analysis was conducted among patients admitted with ACS. The pre-intervention cohort included patients admitted in November and December 2025 (N=63). In January 2026, a multidisciplinary educational intervention was implemented. The post-intervention cohort included patients admitted in February and March 2026 (N=39). The intervention consisted of targeted teaching sessions for resident physicians and APP's on guideline-directed lipid management in ACS, including optimization of statin intensity (escalation from moderate- to high-intensity therapy) and addition of ezetimibe when indicated for patients with LDL-C > 55 mg/dL for patients on maximally tolerated statins. Clinical decision support tools were distributed, including reminder pamphlets and pocket cards summarizing the 2025 ACC/AHA ACS guideline recommendations for lipid management. Additionally, clinical pharmacists on the CCU, cardiology, and cardiac surgery services were educated and activated to actively recommend appropriate lipid therapy escalation during daily rounds and at discharge planning.

Results

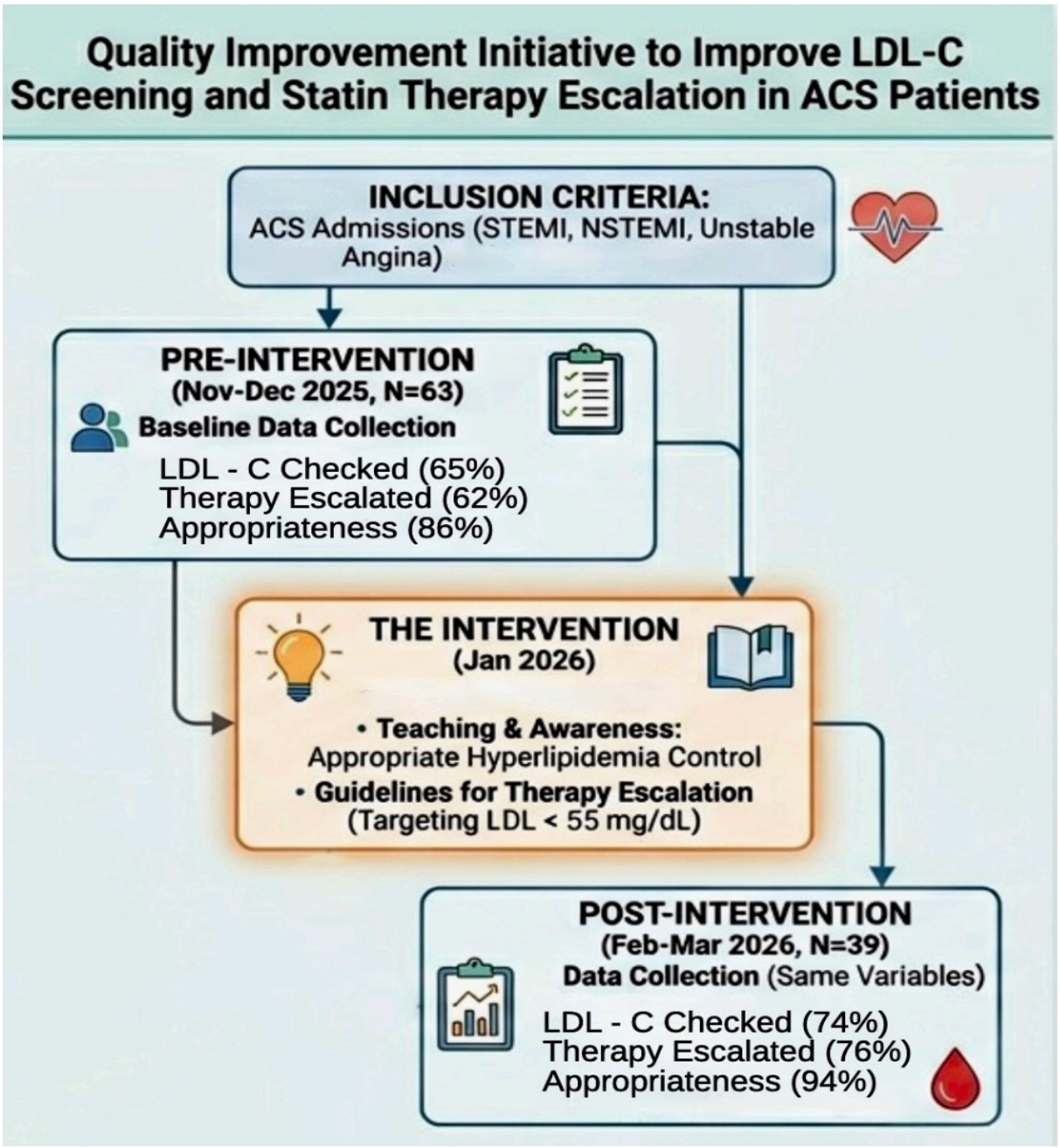
Both cohorts were predominantly composed of patients with NSTEMI and were managed with percutaneous coronary intervention (PCI), coronary artery bypass grafting (CABG) or medical therapy. Following the educational intervention, the proportion of patients who had LDL-C measured during admission increased from 65% to 74%. Among patients with LDL-C ≥55 mg/dL who were not already on optimal therapy, the rate of statin therapy escalation at discharge improved from 62% to 76%. The proportion of appropriate therapy escalation also increased from 86% pre-intervention to 94% post-intervention.

Discussion

Results from this first PDSA cycle are promising, demonstrating improvements across all measured outcomes. LDL-C screening increased from 65% to 74%, statin escalation improved from 62% to 76%, and appropriate therapy escalation rose from 86% to 94%. These findings are consistent with published evidence supporting multidisciplinary approaches to lipid management in ACS, where pharmacist-led interventions have been shown to significantly improve guideline adherence. However, room for improvement remains as 26% of patients still did not have LDL-C checked during admission, and statin escalation occurred in only 76% of eligible patients.

Future PDSA cycles will expand beyond lipid management to address the full spectrum of guideline-directed post-ACS secondary prevention. A comprehensive ACS discharge checklist is being developed for use across all services (CCU, cardiology, and cardiac surgery) to systematically prompt providers to address key interventions prior to discharge, including: verification of DAPT coverage, referral to cardiac rehabilitation, administration of influenza vaccination when, optimization of lipid-lowering therapy, and assessment of social determinants of health that may affect medication access and follow-up.

Variable	Pre-Intervention (Nov–Dec 2025)	Post-Intervention (Feb–Mar 2026)
Total Patients (N)	63	39
Age (Mean ± SD)	68.4 ± 13.4	65.3 ± 11.3
Female (%)	50.8%	25.6%
Diagnosis		
- NSTEMI	54	35
- STEMI	8	3
- Unstable Angina	1	1
Management		
- CABG	21	15
- PCI	23	14
- Medical	19	10
LDL-C (Mean ± SD)	87.4 ± 42.2	84.9 ± 42.1
LDL Checked (%)	65%	74%
LDL-C <55 mg/dL (%)	17.1%	27.6%
Statin Escalation at Discharge (%)	62%	76%
Appropriate Escalation (%)	86%	94%


Quality Improvement Initiative to Improve LDL-C Screening and Statin Therapy Escalation in ACS Patients
INCLUSION CRITERIA:
ACS Admissions (STEMI, NSTEMI, Unstable Angina)
PRE-INTERVENTION
(Nov-Dec 2025, N=63)
Baseline Data Collection
LDL - C Checked (65%)
Therapy Escalated (62%)
Appropriateness (86%)
THE INTERVENTION
(Jan 2026)
• Teaching & Awareness:
Appropriate Hyperlipidemia Control
• Guidelines for Therapy Escalation
(Targeting LDL < 55 mg/dL)
POST-INTERVENTION
(Feb-Mar 2026, N=39)
Data Collection (Same Variables)
LDL - C Checked (74%)
Therapy Escalated (76%)
Appropriateness (94%)

Winner: 2nd Place

Improving Compliance Rate with A Newly Established Protocol for Evaluation and Management of Severe Hyponatremia

Hamed Hussain, MD1, Mustafa Ali, MD1, Juliano Al Haddad, MD1,2, Bertrand L. Jaber, MD1

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Background

Hyponatremia is the most common electrolyte abnormality encountered in the hospital setting. The evaluation involves careful history and physical examination, a multitude of blood and urine diagnostic studies, and potentially a head CT if the hyponatremia is severe or symptomatic. Comprehensive laboratory testing is not reliably performed, resulting in delayed diagnosis of the underlying cause and management of hyponatremia. This quality improvement (QI) project examined whether the introduction of a new hospital-wide protocol for evaluation and management of severe hyponatremia would successfully enhance clinical decision-making, leading to more consistent adherence to best clinical practices.

Clinical Setting and Stakeholders

This QI project evaluated the effect of the introduction of the severe hyponatremia protocol in the emergency department (ED), the medical intensive care unit (ICU), and the cardiac care unit (CCU). Stakeholders were patients, nurses, emergency department physicians, medical intensivists, nephrologists, interns, and residents.

Quality Improvement Plan

This study utilized the Six Sigma Model to assess and improve the evaluation of severe hyponatremia, defined as serum sodium < 125 mEq/L. We reviewed existing policies and current best-practice recommendations related to hyponatremia evaluation. Pre-intervention data was collected by reviewing inpatient charts in the 6-month period preceding implementation of the severe hyponatremia protocol (March 2024 – August 2024), and post-intervention data was collected by reviewing inpatient charts in the 6-month period after implementation of the protocol (October 2024 – March 2025). The primary quality indicators we focused on were an improvement in the rate of obtaining hyponatremia diagnostic studies (i.e., serum osmolality, urine osmolality, urine sodium, urine creatinine, serum thyroid stimulating hormone [TSH], random cortisol, uric acid, and a head CT if symptomatic), and the time-to-resulting these studies from the time the initial serum sodium was resulted. We focused on physicians in the ED, ICU, and CCU, including attending physicians, interns, and residents. The intervention consisted of posting signage and posters with detailed algorithms on the evaluation of severe hyponatremia, in addition to distributing the materials through email. Data were compiled in an Excel spreadsheet, and statistical analysis were performed using the Chi-Square test to compare the rates of obtaining the diagnostic studies, and the Mann-Whitney U test to compare time until the results were available before and after implementation of the severe hyponatremia protocol.

Results

Following implementation of the protocol, patients with severe hyponatremia were more likely to receive a nephrology consultation (76% vs. 56%) and have a urine creatinine (68% vs. 59%), a random cortisol (80% vs 53%), and a serum uric acid (80% vs. 13%) measured. Rates of measuring serum osmolality, urine osmolality, urine sodium, and TSH were high and remained unchanged following protocol implementation. Head CT-scan was obtained slightly less frequently following implementation of the protocol (52% vs. 59%), although this was affected by factors such as patients having already undergone a head CT at outside facilities. The time-to-result of the diagnostic studies improved following protocol implementation for serum osmolality (224 vs. 673 minutes), urine sodium (297 vs. 753 minutes), urine osmolality (342 vs. 791 minutes), urine creatinine (363 vs. 983 minutes), random cortisol (302 vs. 1594 minutes), and TSH (476 vs. 1254 minutes). Following protocol implementation, a slightly higher percentage of patients were admitted to the ICU (64% vs. 56%).

Limitations

This QI project was conducted at a single institution, and the sample size was small, limiting generalizability. Post-protocol implementation data was collected soon after the launch, which may reflect short-term rather than sustained effects, and additional interventions are likely needed to assess durability.

Conclusions

Severe hyponatremia is a serious electrolyte disorder that requires prompt evaluation and timely management. In this QI project aimed at implementing a severe hyponatremia protocol in the hospital, we were able to achieve improvement in the completion of the initial diagnostic work up and a decrease in the time-to-resulting of blood and urine tests aimed at guiding the timely management of this complex disorder.

Winner: 3rd Place

Improving Depression Screening in a Resident Primary Care Clinic Through a Standardized PHQ-2/PHQ-9 Workflow: A Quality Improvement Study

Jack Moyer and Sinju Joseph
Department of Medicine, Boston Medical Center - Brighton, Boston, MA

Background

Depression is common, underdiagnosed, and associated with worse health outcomes when left untreated. Although routine depression screening is recommended in primary care, implementation can be inconsistent in resident clinics because of competing demands and lack of standardized workflow. At BMC-Brighton Primary Care Clinic, we identified very low rates of documented depression screening and developed a quality improvement initiative to increase screening at routine patient visits.

Clinical Setting and Stakeholders

For our first PDSA cycle, we designed and implemented a standardized workflow to integrate depression screening into all patient encounters. Printed PHQ-2 forms were kept at the front desk in the most commonly spoken languages in our clinic. During check-in, front desk staff distributed a PHQ-2 form to every patient presenting for a visit. Patients completed the form in the waiting room. During intake, the MA or RN scored the PHQ-2 and entered the result into Epic. For patients whose PHQ-2 met criteria for further evaluation, a PHQ-9 form was then provided for completion in the exam room. The resident physician reviewed, scored, and documented the PHQ-9 in Epic. The residents were also provided guidelines regarding treatments based on scoring. We compared documentation rates before and after implementation.

Results

In the pre-intervention period from November 1, 2025 through February 27, 2026, only 4 documented PHQ screenings across 477 patient encounters, reflecting extremely low baseline screening rates. In the post-intervention period (March 3rd, 2026 to May 20th, 2026), there were 150 documented PHQ-2 screenings and 4 documented PHQ-9 screenings across 339 patient visits. This corresponded to an increase in documented PHQ-2 screening from 0.8% of encounters pre-intervention to 44.2% post-intervention. These findings demonstrate a substantial early improvement in routine depression screening after introduction of a simple standardized workflow.

Conclusion

A low-cost, multidisciplinary workflow change significantly improved documented depression screening in our resident primary care clinic. Embedding PHQ-2 distribution into check-in and assigning scoring/documentation responsibilities across front desk staff, nursing staff, and resident physicians improved uptake of screening. This intervention is feasible, scalable, and may help improve identification of depression in primary care settings. Additional PDSA cycles will further help optimize workflow and increase depression screening rates in BMC-B Primary Care Clinic.

Honorable Mention

Standardized ED Atrial Fibrillation Pathway: A Quality Improvement Initiative

Obinna Ofoche1, Ziad Qadedah2, Surik Sedrakyan2, Christopher Tanski4, John Ryan4, Jeremiah Schurr3, 5, John Wylie1, 6

1Dept of Cardiology - Boston Medical Center (BMC) – Brighton, 2Dept of Internal Medicine – BMC Brighton, 3Dept of Emergency Medicine - BMC Brighton, 4Pfizer, 5Dept of Emergency Medicine - Merrimack Health Lawrence Hospital, 6Dept of Cardiology - Beth Israel Deaconess Medical Center

Background

Standardized emergency department (ED) pathways for atrial fibrillation (AF) have been shown to reduce hospital admissions without increasing adverse events. At our institution, variability in AF management and frequent potentially avoidable admissions prompted the development of a multidisciplinary ED AF pathway.

Objectives

To implement a standardized ED AF pathway and evaluate its impact on hospital admissions, outpatient follow-up, and adherence to guideline-directed management.

Methods

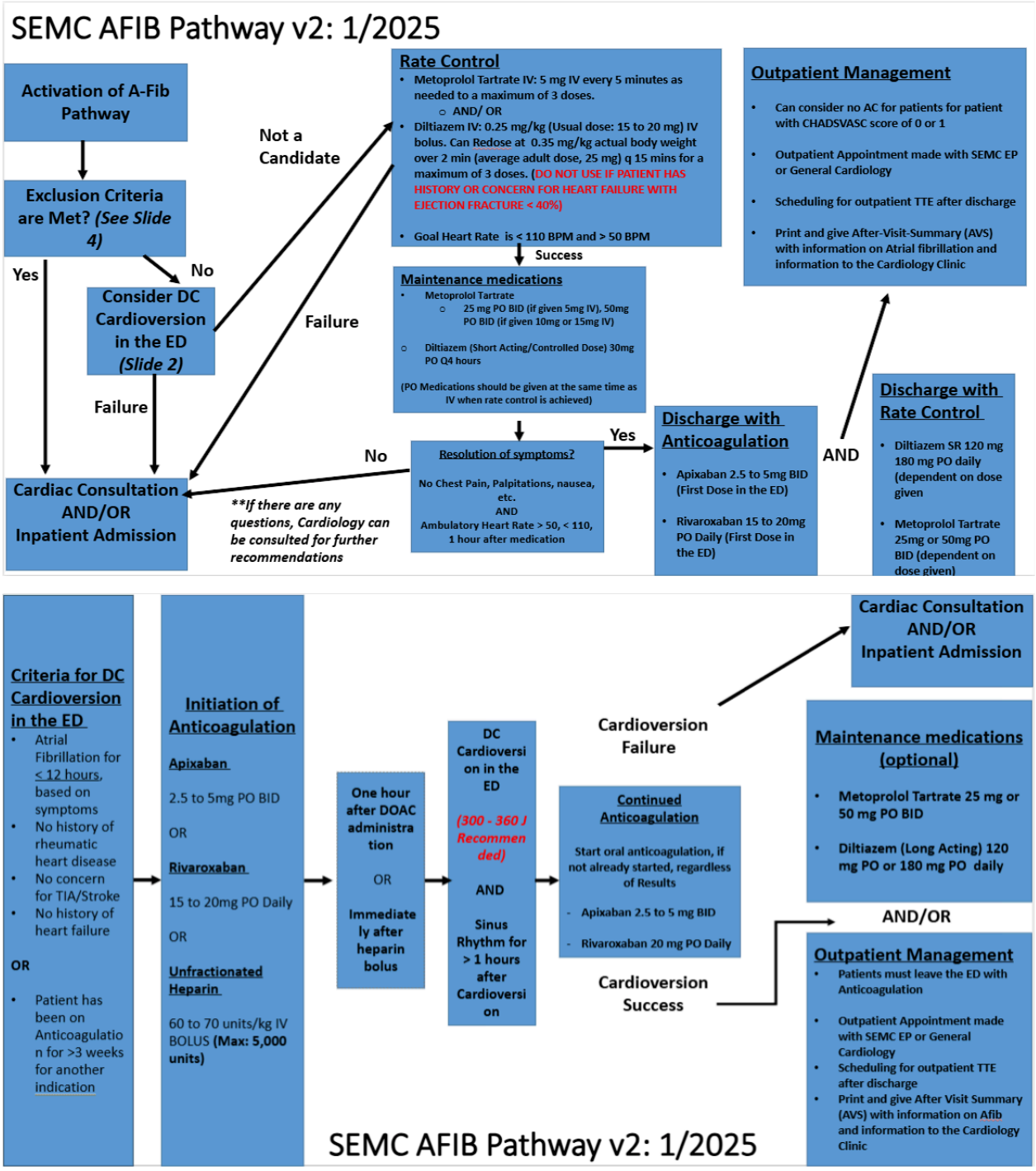
We conducted a retrospective pre–post quality improvement analysis comparing 6 months of pre-intervention data (February–June 2023) to 12 months of post-intervention data (February 2024–January 2025). The pathway targeted patients with uncomplicated AF and excluded those with high-acuity comorbidities or alternative indications for admission. The intervention included standardized anticoagulation dosing, cardioversion guidance, rate control strategies, and criteria for cardiology consultation. Outcomes were analyzed using chi-square/Fisher's exact and t-test/Mann-Whitney U tests (α=0.05).

Results

A total of 98 patients were included (55 pre-intervention, 43 post-intervention). Appropriate rate-control medication use increased from 43.9% to 63.6%, though this did not reach statistical significance (p=0.084). There were no significant differences in hospital admissions (50.9% vs. 53.5%, p=0.80), ED discharges (47.3% vs. 46.5%, p=0.94), outpatient follow-up (72.7% vs. 74.4%, p=0.85), DOAC prescribing (85.5% vs. 74.4%, p=0.177), or cardioversion rates (26.9% vs. 34.9%, p=0.403).

Conclusions

Implementation of a standardized ED AF pathway in a community hospital setting was feasible but did not significantly impact clinical outcomes. Limited effect size may reflect system-wide financial instability leading to low patient volume, provider turnover, and lack of integrated EMR order sets. Future efforts will focus on workflow optimization, provider education, and EMR-based decision support to improve adherence and outcomes.


SEMC AFIB Pathway v2: 1/2025
Activation of A-Fib Pathway
Exclusion Criteria are Met? (See Slide 4)
Yes
No
Consider DC Cardioversion in the ED (Slide 2)
Failure
Not a Candidate
Failure
Cardiac Consultation AND/OR Inpatient Admission
**If there are any questions, Cardiology can be consulted for further recommendations
Rate Control
Metoprolol Tartrate IV: 5 mg IV every 5 minutes as needed to a maximum of 3 doses.
AND/ OR
Diltiazem IV: 0.25 mg/kg (Usual dose: 15 to 20 mg) IV bolus. Can Redose at 0.35 mg/kg actual body weight over 2 min (average adult dose, 25 mg) q 15 mins for a maximum of 3 doses. (DO NOT USE IF PATIENT HAS HISTORY OR CONCERN FOR HEART FAILURE WITH EJECTION FRACTURE < 40%)
Goal Heart Rate is < 110 BPM and > 50 BPM
Success
Maintenance medications
Metoprolol Tartrate
25 mg PO BID (if given 5mg IV), 50mg PO BID (if given 10mg or 15mg IV)
Diltiazem (Short Acting/Controlled Dose) 30mg PO Q4 hours
(PO Medications should be given at the same time as IV when rate control is achieved)
Resolution of symptoms?
No Chest Pain, Palpitations, nausea, etc.
AND
Ambulatory Heart Rate > 50, < 110, 1 hour after medication
No
Yes
Discharge with Anticoagulation
Apixaban 2.5 to 5mg BID (First Dose in the ED)
Rivaroxaban 15 to 20mg PO Daily (First Dose in the ED)
AND
Outpatient Management
Can consider no AC for patients for patient with CHADSVASC score of 0 or 1
Outpatient Appointment made with SEMC EP or General Cardiology
Scheduling for outpatient TTE after discharge
Print and give After-Visit-Summary (AVS) with information on Atrial fibrillation and information to the Cardiology Clinic
Discharge with Rate Control
Diltiazem SR 120 mg 180 mg PO daily (dependent on dose given
Metoprolol Tartrate 25mg or 50mg PO BID (dependent on dose given)
Criteria for DC Cardioversion in the ED
Atrial Fibrillation for < 12 hours, based on symptoms
No history of rheumatic heart disease
No concern for TIA/Stroke
No history of heart failure
OR
Patient has been on Anticoagulation for >3 weeks for another indication
Initiation of Anticoagulation
Apixaban
2.5 to 5mg PO BID
OR
Rivaroxaban
15 to 20mg PO Daily
OR
Unfractionated Heparin
60 to 70 units/kg IV BOLUS (Max: 5,000 units)
One hour after DOAC administration
OR
Immediately after heparin bolus
DC Cardioversion in the ED
(300 - 360 J Recommended)
AND
Sinus Rhythm for > 1 hours after Cardioversion
Continued Anticoagulation
Start oral anticoagulation, if not already started, regardless of Results
Apixaban 2.5 to 5 mg BID
Rivaroxaban 20 mg PO Daily
Cardioversion Failure
Cardioversion Success
Cardiac Consultation AND/OR Inpatient Admission
Maintenance medications (optional)
Metoprolol Tartrate 25 mg or 50 mg PO BID
Diltiazem (Long Acting) 120 mg PO or 180 mg PO daily
AND/OR
Outpatient Management
Patients must leave the ED with Anticoagulation
Outpatient Appointment made with SEMC EP or General Cardiology
Scheduling for outpatient TTE after discharge
Print and give After Visit Summary (AVS) with information on Afib and information to the Cardiology Clinic
SEMC AFIB Pathway v2: 1/2025

Honorable Mention

A Quality Improvement Initiative to Enhance Resident Engagement in Ambulatory Education

Ibrahim Kamel1, Zahir Shaikh1, Ahmed Mahmoud1, Harinder Singh1

1: Boston Medical Center – South, Boston, MA

Background

Participation in ambulatory education is critical for Internal Medicine resident training but is frequently limited by scheduling conflicts and competing clinical demands. In our residency program, attendance at the Monday morning Academic Ambulatory Medicine (AM) conference and completion of asynchronous Physician Education and Assessment Center (PEAC) modules were low. A baseline survey of 30 residents conducted at the start of the academic year identified major barriers to participation, with 80% reporting difficulty attending the Monday conference due primarily to weekend overnight coverage and post-call fatigue. We aimed to improve resident engagement in ambulatory education by increasing AM conference attendance and PEAC module completion.

Methods

Using two sequential Plan–Do–Study–Act (PDSA) cycles, we implemented targeted workflow-based interventions.

PDSA Cycle 1: The AM conference was rescheduled from Monday to Friday to better align with ambulatory rotation schedules and reduce post-call conflicts. Attendance and resident satisfaction were measured over the following three months.

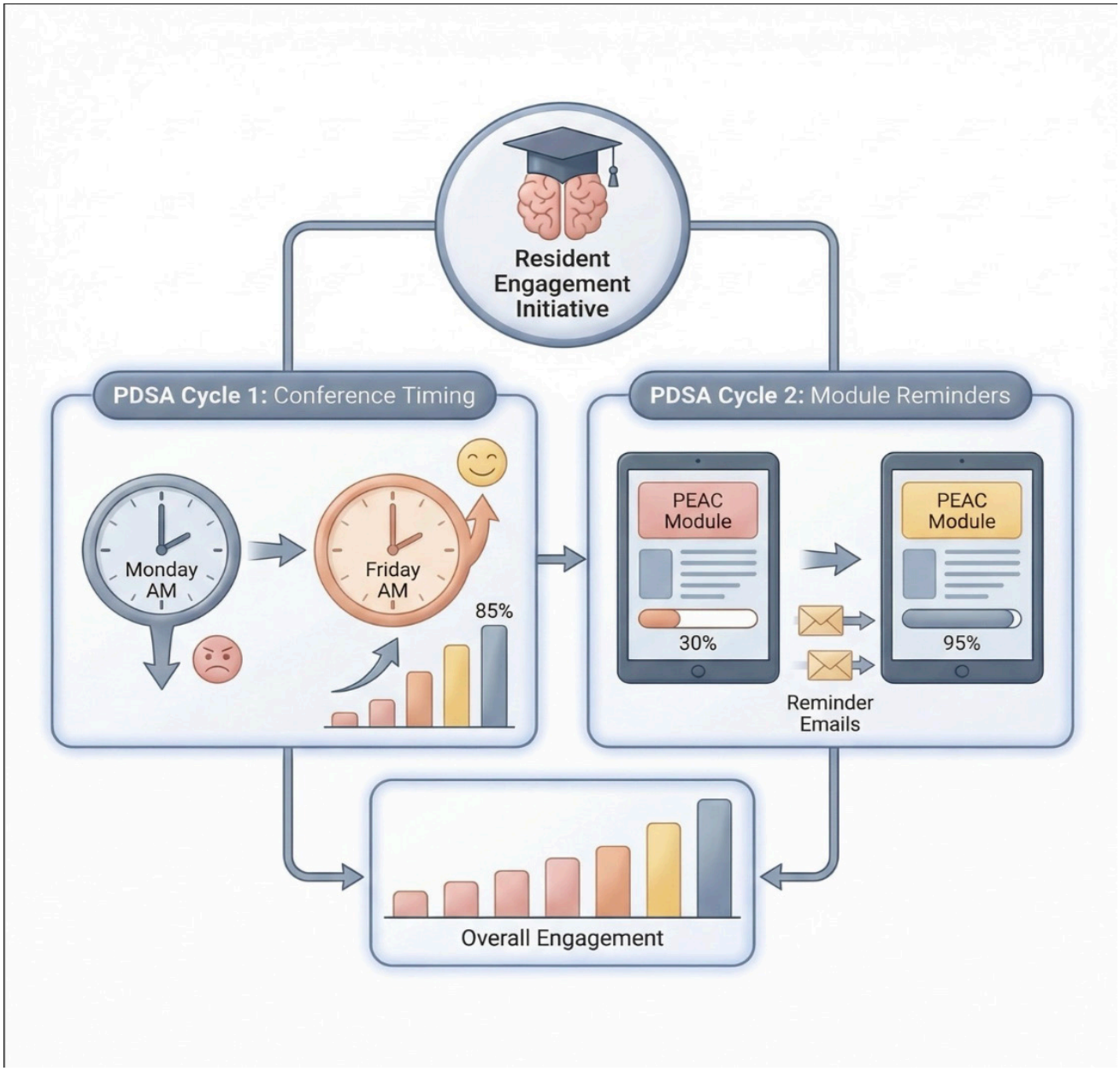
PDSA Cycle 2: To improve asynchronous learning completion, structured email reminders were introduced before PEAC module deadlines.

Results

Following the schedule change, resident satisfaction with conference timing increased to 100%, and conference attendance increased to 85%. Despite improved attendance, PEAC module completion during the first three months remained low at 30%. After implementation of reminder emails during the second PDSA cycle, completion rates increased to 80% with one reminder email and further improved to 95% when two reminders were sent.

Conclusions

Aligning educational activities with resident workflow significantly improved conference attendance and satisfaction. While scheduling changes alone did not improve asynchronous learning completion, structured reminder systems resulted in a marked increase in module completion. This initiative highlights how simple, low-cost system interventions—such as schedule redesign and reminders—can substantially improve resident engagement in ambulatory education. These strategies may be easily replicated across residency programs to enhance participation in educational curricula.


Resident Engagement Initiative
PDSA Cycle 1: Conference Timing
Monday AM
Friday AM
85%
PDSA Cycle 2: Module Reminders
PEAC Module
30%
PEAC Module
95%
Reminder Emails
Overall Engagement

Honorable Mention

Antimicrobial Stewardship in Sepsis: Optimizing Empiric Antipseudomonal and Anti-MethicillinResistant Staphylococcus aureus Therapy

Mary Luck, PharmD, RPh

Background

Sepsis is a life-threatening condition caused by a dysregulated response to an infection. Empiric broad-spectrum antibiotics are often overused, which contributes to antimicrobial resistance, adverse drug events, and increased costs. The 2021 Surviving Sepsis Campaign identified risk factors that would warrant methicillin-resistant Staphylococcus aureus (MRSA) and Pseudomonas aeruginosa (PA) coverage. At our institution, the sepsis order set highlights the risk factors for PA or MRSA; however, they lack hard stops. The objective of this project is to reduce the use of inappropriate anti-PA and antiMRSA therapy in patients with sepsis by 30% by March 31, 2026

Methods

This is a quasi-experimental before-after, single-center, observational quality improvement project in adult patients who presented to our emergency department (ED) or intensive care (ICU) unit with sepsis and received PA or MRSA coverage. Appropriateness of antibiotic therapy was evaluated based on the presence of risk factors stated in the sepsis guidelines. Multiple Plan-Do-Study-Act (PDSA) cycles were completed throughout the project. MRSA surveillance was transitioned from nasal swab and culture to MRSA PCR. Empiric use of anti-PA beta-lactams without Infectious Disease approval was reduced from 72 to 48 hours. Medical residents received education emphasizing use of the order set that includes decision support. The outcome measure is the reduction in the rate of inappropriate empiric anti-PA β-lactams and anti-MRSA antibiotic use in patients with sepsis measured in days of therapy per 1000 patient days. The process measures include percentage of patients with the sepsis order set, percentage of patients with MRSA screen, and number of accepted pharmacy interventions. Balancing measures include rate of treatment failure, incidence of Clostridioides difficile infection, in-hospital mortality, length of stay, and 30-day readmission rate.

Results

A baseline retrospective chart preview was performed to evaluate current practice. A total of 67 patients admitted to the ICU for sepsis received MRSA or PA coverage from July 15 to September 12, 2025. Eighteen patients met additional inclusion criteria and underwent further chart review. Thirteen patients received appropriate therapy (72%), and 5 patients received inappropriate therapy (28%). The appropriate coverage group had higher incidence of treatment failure and in-hospital mortality which may be associated with higher baseline illness severity. The majority of cultures collected were negative or grew pathogens consistent with contamination. Isolation of MRSA and PA was rare with 2/40 isolates (5%) positive for MRSA and no isolates positive for PA.

Conclusion

Data evaluation for prospective PDSA cycles is ongoing and will be presented at Boston Medical Center Research Day.

Preliminary Analysis of Inpatient Psychiatry Restraint Events Between 2024-2025 at a Community Hospital

Zilin Cui, Rachel Mimbella, Habiba Abozeid, Paula Traugott, Gregory Yee, Anna Lanoue, Nandini Bhattacharjee, Jessica Irizarry, Ziyu Song, Jason Strauss

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Background

On acute inpatient psychiatry units, restraints, seclusion, and intramuscular injections may be used in emergency situations to maintain safety; however, these practices can inadvertently be traumatizing for both patients and staff. Many organizations, including the Substance Abuse and Mental Health Services Administration (1), American Psychiatric Association (2) and the American Psychiatric Nurses Association (3) advocate for minimizing use of restraints through trauma-informed, culturally sensitive, patient-centered care. Inpatient psychiatry units worldwide have used various types of methodologies to identify solutions and guide initiatives in support of this goal (4). The present study seeks to support our own institution's efforts to reduce restraint utilization by identifying factors associated with the use of restraint and seclusion on two inpatient psychiatry units.

Methods

On acute inpatient psychiatry units, restraints, seclusion, and intramuscular injections may be used in emergency situations to maintain safety; however, these practices can inadvertently be traumatizing for both patients and staff. Many organizations, including the Substance Abuse and Mental Health Services Administration (1), American Psychiatric Association (2) and the American Psychiatric Nurses Association (3) advocate for minimizing use of restraints through trauma-informed, culturally sensitive, patient-centered care. Inpatient psychiatry units worldwide have used various types of methodologies to identify solutions and guide initiatives in support of this goal (4). The present study seeks to support our own institution's efforts to reduce restraint utilization by identifying factors associated with the use of restraint and seclusion on two inpatient psychiatry units.

Results

73 restraint events from 46 patients documented were included in this initial analysis. Patients restrained had a mean age of 33.1, with the youngest being 19, and the oldest being 77. 45.7% of the patients identified in part as black, 42.3% white, 10.9% Hispanic/Latino, and 4.3% Asian. In terms of gender, 65.2% identified as cisgender men, 28.3% cisgender woman, and 6.5% identified as transgender men. English was the primary language, spoken by 87.0% of the sample. For insurance, 61.0% had MassHealth, 19.5% had Medicare, 14.6% had commercial insurance, and 4.9% had no insurance.
55.3% of restraints occurred during the first 48 hours after patients were admitted to either inpatient psychiatry unit. Time of day of restraints followed a bimodal distribution, with peak times at 10:00 and 19:00. Restraints were 88.0% more likely to take place between 12:00 – 23:59 compared to 00:00 – 11:59 ($X2 = 10.11$, $p = 0.02$), and 10.4% less likely to take place on any given weekend day compared to weekdays ($X2 = 16.1$, $p = <0.001$).

Patients who identified as black/African American experienced a greater number of restraints (OR = 1.65, p-value = 0.002) but were less likely to be physically restrained (OR = 0.26, p-value = 0.02). Patients who identified as Hispanic/Latino were less likely to receive intramuscular medications during the restraint (OR = 0.09, p-value = 0.03), as were patients whose primary language was not English (OR = 0.16, p-value = 0.02). Patients were less likely to be mechanically restrained within one hour before or one hour after staff shift change (OR = 0.28, p-value = 0.05). All other models examining restraint outcomes based on shift change, primary language, and race were nonsignificant.

Conclusions

This is the preliminary analysis of an ongoing project to collect data on restraint events and identify opportunities for further study and quality improvement. For example, findings demonstrating higher rates of restraints during afternoon and evening hours, as well as on weekdays compared to weekends, highlight the need for further investigation into unmet patient needs during these periods. Additionally, more than half of restraint events occurred within 48 hours of admission, making this a critical period for further research. The finding that Black/African American patients were more likely to have multiple restraints is consistent with prior literature, with implicit bias and communication barriers being some of the proposed mechanisms for this inequity (5, 6). However, additional research is required to understand the mechanisms underlying these disparities. Similarly, future investigation is warranted with the finding of decreased usage of IM medications in both patients who identify as Hispanic/Latino and who do not speak English as a primary language. Limitations include the inability to study causality secondary to the study design and the small sample size restricting conclusions that can be drawn from this initial analysis. Replication in larger samples will be essential to validate these findings and further deepen our understanding of these relationships.

Improving the Evaluation of Secondary Skeletal Etiologies in Patients With Hip Fractures: A Quality Improvement Initiative.

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1Department of Medicine, BMC-Brighton, MA, USA Department of Psychiatry, Boston Medical Center - Brighton.

Introduction

In patients aged 50 years or older, hip, vertebral, and/or forearm fractures are highly suggestive of osteoporosis or other metabolic bone disease resulting in skeletal fragility, unless excluded by clinical evaluation and imaging. In addition, the risk of future fractures increases substantially after an initial fracture, signaling the need for immediate clinical intervention. Secondary skeletal disorders, such as chronic kidney disease (CKD), hyperparathyroidism, and osteomalacia, often contribute to skeletal fragility, multiple vertebral fractures, and low bone density. Early identification and management of these conditions can significantly reduce the risk of further fractures and improve patient outcomes. Therefore, the aim of this QI project is to improve the identification and evaluation of secondary skeletal etiologies in all adult patients who present with hip fractures.

Methods

The goal of our quality improvement project was to improve the identification and evaluation of secondary skeletal etiologies in adults presenting with hip fractures. Stakeholders admitting physicians and physician assistants, orthopedic teams, and patients. Adults aged ≥50 years admitted with a new hip fracture since June 2023 were identified. A retrospective chart review was conducted to determine the proportion of patients who underwent appropriate laboratory evaluation, including complete blood count (CBC), chemistry panel (albumin-adjusted calcium, renal function, phosphorus, and magnesium), liver function tests (LFTs), 25-hydroxyvitamin D, and parathyroid hormone (PTH). Following baseline data collection, the admitting teams were educated on the importance of evaluating secondary causes of skeletal fragility and the need for consistent ordering of a standardized laboratory bundle to facilitate early identification of underlying conditions such as chronic kidney disease, hyperparathyroidism, and osteomalacia. This educational intervention constituted the first Plan-Do-Study-Act (PDSA) cycle. Three months after the intervention, a repeat chart review using the same methodology was performed to assess improvement in adherence to recommended laboratory evaluation. To ensure sustainability, ongoing QI team review and reinforcement is performed.

Results

In total, 101 and 17 patients aged ≥50 years admitted with hip fractures were included in the pre- and post-intervention periods, respectively. Mean age was similar between the two groups (78.1 vs. 79.5 years). There was no significant difference in the proportion of female patients between the pre- and post-intervention periods (58.4% vs. 82.4%; $p = 0.11$). Baseline laboratory ordering rates for complete blood count (CBC) and basic metabolic panel (BMP) were 100% in both groups. There were no statistically significant differences in the ordering of liver function tests (99.0% vs. 100%; $p = 1.00$), calcium (97.0% vs. 100%; $p = 1.00$), phosphorus (23.8% vs. 23.5%; $p = 1.00$), or magnesium (62.4% vs. 52.9%; $p = 0.64$) between the two periods. Following the intervention, vitamin D ordering significantly increased from 8.9% to 29.4% ($p = 0.044$), while parathyroid hormone (PTH) ordering showed a non-significant increase (2.9% vs. 5.9%; $p = 1.00$). Overall, the intervention led to a significant improvement in vitamin D assessment.

Conclusion

This quality improvement initiative led to significant improvement of vitamin D assessment in patients with hip fracture. Further efforts, including EMR-based standardization and ongoing education, are needed to improve adherence to comprehensive laboratory workup and reduce future fracture risk.

Table 1. Clinical Characteristics of Patients With Fragility Fractures and Rates of Laboratory Workup Completion During the Pre-Intervention and Post-Intervention (First PDSA Cycle) Periods

	Pre-intervention period (n =101)	Post-intervention period (n =17)	p-value
Mean age, years	78.1	79.5	-
Female Sex	59	14	0.11
CBC	100	100	-
BMP	100	100	-
LFTs	99.0	100	1.00
Calcium	97.0	100	1.00
Phosphorus	23.8	23.5	1.00
Magnesium	62.4	52.9	0.64
Vitamin D	8.9	29.4	**0.044**
PTH	2.9	5.9	1.00

PDSA, Plan-Do-Study-Act

Winner: 1st Place

Chasing TSH: The Importance of a Stepwise Approach in Apparent Levothyroxine Failure

Ahmed Abouelazaem, MD 1· Sara Ramadan, MD 1· Zhiheng He, MD 1.

1 Boston Medical Center-Brighton, Boston, USA.

Background

Difficult to control hypothyroidism remains a diagnostic and therapeutic challenge, particularly in patients with complex gastrointestinal comorbidities. This frequently leads to empiric escalation to alternative costly levothyroxine (LT4) formulations or parenteral therapy without objective confirmation of mechanism. We present a case highlights the value of structured reassessment in apparent refractory hypothyroidism.

Case Presentation

A 76-year-old frail woman with long-standing symptomatic hypothyroidism and persistently elevated TSH despite escalating LT4 therapy, including standard tablets, soft-gel (Tirosint), liquid LT4, and intramuscular LT4 at 500 mcg weekly for over two years. Her history included severe underweight (BMI 14) and distal pancreatectomy, pancreatic enzyme replacement was optimized. Interfering factors, including biotin supplementation and heterophile antibody interference, were systematically excluded. A supervised LT4 absorption test demonstrated a ≥67% absorption, effectively excluding clinically significant malabsorption. Consumptive hypothyroidism due to excess type 3 deiodinase activity was considered but lacked clinical or laboratory support. Management was reframed to focus on pharmacokinetic optimization rather than non-oral therapy. LT4 was reintroduced orally with a fixed bedtime dosing schedule, titrated to 200 mcg daily (2.6 mcg/kg/day). After this adjustment, the patient's TSH declined steadily and normalized to 2.17 mIU/L, representing the first sustained biochemical control in several years. The patient reported no thyroid-specific hyper- or hypothyroid symptoms, though baseline fatigue persisted and was deemed multifactorial.

Conclusion

Levothyroxine malabsorption is primarily associated with gastric or intestinal pathology rather than pancreatic disease. In a four-year Mayo Clinic study, true malabsorption was uncommon (8%), with most cases reflecting pseudomalabsorption. This case highlights the value of a structured, stepwise approach to apparent refractory hypothyroidism: verifying adherence, excluding assay and medication interference, optimizing LT4 dosing timing, and performing formal absorption testing before escalating to alternative formulations or parenteral therapy. Such approach provides a cost-effective approach in the management of refractory hypothyroidism

Winner: 2nd Place

A Case of Acute Hemolytic Anemia with Methemoglobinemia And Pernicious Anemia After Chronic Amyl Nitrite Use

Sinju Joseph, DO, Pakin Lalitnithi, MD, Dhruv Kansal, MD, Lisa Bajpayee, MD

Department of Internal Medicine, BMC- Brighton, BMC Health System, Boston, MA. Department of Pulmonary and Critical Care, BMC- Brighton, BMC Health System, Boston, MA

Introduction

Amyl nitrites ("poppers") are inhalants used recreationally for their vasodilatory and euphoric effects. They are potent oxidizing agents capable of inducing methemoglobinemia and, in susceptible individuals, hemolytic anemia—particularly in those with glucose-6-phosphate dehydrogenase (G6PD) deficiency.

Clinical Presentation

A 55-year-old man with treated neurosyphilis, psoriasis, and long-term popper use (every other day for ~30 years) presented to the emergency department for progressive fatigue, jaundice, and dark urine. On presentation, he was hypoxic (SpO_2 84% on room air) without respiratory distress with stable vitals including blood pressure and heart rate. On physical examination, there was conjunctival pallor but no hepatosplenomegaly or petechiae noted. Laboratory evaluation revealed acute macrocytic hemolytic anemia (hemoglobin 8.7 g/dL from baseline 13.2 g/dL, MCV 110 fL, reticulocyte index 10%, haptoglobin <10 mg/dL, LDH 1867 U/L, indirect bilirubin 3.5 mg/dL), negative direct antiglobulin test, and peripheral smear showing acanthocytes, spherocytes, and basophilic stippling. Iron studies showed elevated serum iron and transferrin saturation. Vitamin b12 levels were noted to be 290 pg/mL and his intrinsic factor antibodies were positive. Arterial blood gas demonstrated PaO_2 62.7 mmHg, methemoglobin 3.0%, and carboxyhemoglobin 4.1%. He did have some degree of SpO2-PaO2 dissociation as noted on his vitals and blood gas.

Given the hemolysis secondary to oxidant injury, methylene blue was withheld due to concern for potential G6PD deficiency. There were also concerns of pernicious anemia contributing to his anemia. He was treated with high-dose ascorbic acid, vitamin B12 repletion, and supportive care with supplemental oxygen which was weaned off quickly from HFNC to room air. G6PD level was obtained but recognized as potentially unreliable in the acute setting. The patient improved clinically and was discharged with hematology follow-up for further evaluation.

Discussion

Chronic popper use can cause oxidative stress leading to both methemoglobinemia and hemolysis, even at mild methemoglobin levels in susceptible patients. In patients presenting with hypoxia and hemolytic anemia after nitrite exposure, G6PD deficiency should be suspected, and methylene blue should be avoided until excluded. There should be an evaluation for nutritional anemias either due to diet-related issues or autoimmune etiologies like pernicious anemia.

Winner: 3rd Place

Rapid AFP Normalization Following Tremelimumab Plus Durvalumab in Advanced Hepatocellular Carcinoma With Intrathoracic IVC Tumor Thrombus

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Department of Otolaryngology, Boston Medical Center - Brighton, Boston, MA, USA

Introduction

Hepatocellular carcinoma (HCC) is the third leading cause of cancer-related mortality worldwide, with chronic HBV infection accounting for approximately 50% of cases globally. BCLC stage C disease defined by macrovascular invasion, extrahepatic spread, or ECOG performance status 1-2 carries a median survival of 12-15 months with systemic therapy. The immunotherapy landscape has been transformed by two pivotal trials: IMbrave150 (atezolizumab plus bevacizumab) and HIMALAYA (tremelimumab plus durvalumab, the STRIDE regimen), both demonstrating superiority over sorafenib. Tumor thrombus involving the hepatic veins and IVC is an uncommon but particularly aggressive manifestation of HCC, occurring in 2-4% of cases, and optimal management remains ill-defined. We present a case remarkable for explosive AFP trajectory, exceptional immunotherapy response, and multimodal management of intrathoracic IVC tumor thrombus.

Description of Case

A 70-year-old Vietnamese-American man with chronic HBV infection managed on entecavir presented with a 2-3 month history of progressive abdominal bloating and decreased appetite. He was an active smoker (1 ppd) with hypertension and benign prostatic hyperplasia. He had been adherent to routine HCC surveillance, with the last reportedly normal ultrasound in 2023 and serial AFP measurements ranging from 2.1 to 3.2 ng/mL between 2019 and April 2025. HBV DNA had remained undetectable throughout treatment. Right upper quadrant ultrasound (December 2025) revealed an 8.2 cm heterogeneous vascular hepatic mass. CT liver protocol (January 5, 2026) confirmed a 9.4 cm heterogeneous mass in segment IV with arterial hyperenhancement and portal venous washout, consistent with HCC (LI-RADS 5). Tumor thrombus was identified involving the middle hepatic vein and extending to the intrathoracic IVC at the inferior cavoatrial junction, without right atrial involvement. No extrahepatic metastases were identified. PET scan confirmed FDG-avid tumor thrombus along this trajectory. Serum AFP was 37,764 ng/mL a rise from 3.2 ng/mL nine months prior. CEA and CA 19-9 were normal. Liver function was preserved (Child-Pugh A; bilirubin 0.7, albumin 4.8, INR normal). The patient was staged as BCLC C. Two paraneoplastic phenomena were identified: erythrocytosis (hemoglobin 18.3 g/dL, hematocrit 52.2%), attributed to ectopic erythropoietin secretion by the HCC and/or active smoking; and transient thrombocytopenia (platelet nadir 81 K/uL at diagnosis, subsequently recovering to 182 K/uL), likely reflecting a combination of hypersplenism and paraneoplastic effect. Notably, the celiac trunk demonstrated severe stenosis with a post-stenotic aneurysm, precluding conventional TACE. Surgical oncology deemed upfront resection unfeasible given macrovascular invasion. First-line systemic therapy selection was guided by the patient's bleeding risk profile: macrovascular IVC invasion, thrombocytopenia nadir, and celiac stenosis collectively represented contraindications to bevacizumab-based therapy. The STRIDE regimen a single priming dose of tremelimumab (300 mg) followed by durvalumab (1500 mg every 4 weeks) was initiated January 20, 2026. The rationale aligns with the HIMALAYA trial design, in which STRIDE demonstrated a 4-year overall survival rate of 25.2% versus sorafenib with a favorable hemorrhagic safety profile.

Discussion

This case highlights the remarkable biochemical response that can occur with dual immune checkpoint blockade in advanced HCC. It also demonstrates the value of the STRIDE regimen in patients who may not be ideal candidates for bevacizumab because of bleeding risk or vascular invasion. Finally, it underscores the growing role of multimodal treatment approaches combining immunotherapy and focused radiation therapy in advanced HCC with vascular tumor involvement.

Honorable Mention

Genitourinary Tuberculosis Complicated by Acute Respiratory Distress Syndrome

Narisara Tribuddharat MD, Hamed Hussain, MD, Lorlowhakarn, Koravich , MD, Duncan Kuhn MD

Background

Tuberculosis (TB) is a leading cause of death worldwide, with an untreated mortality rate as high as 50%[1]. While the most common presentation involves pulmonary disease (PTB), less commonly there is spread to other systems such as gastrointestinal, musculoskeletal, lymphoreticular, and reproductive organs leading to extrapulmonary tuberculosis (EPTB) [2,3]. As TB is relatively uncommon in the United States, atypical presentations may result in delayed diagnosis, leading to more complications and poor outcomes. We present a case of genitourinary tuberculosis (GUTB) presenting chronic suprapubic pain and hematuria. After cystoscopy biopsy and ureteral stent placement, the patient developed severe systemic inflammatory syndrome (SIRS) with multi-organ dysfunction syndrome (MODS) and severe acute respiratory distress syndrome (ARDS) requiring extracorporeal membrane oxygenation (ECMO).

Case Presentation

A 43-year-old woman from Haiti with no significant past medical history presented with six months of suprapubic pain, dysuria, and urinary frequency. She denied fever, gastrointestinal symptoms, vaginal discharge, or recent sexual activity. She had immigrated to the United States one year prior. During multiple prior emergency department visits, urinalyses consistently demonstrated marked pyuria (WBC >100/HPF) and hematuria (RBC >100/HPF), yet urine cultures remained negative. Despite sterile cultures, she received several courses of nitrofurantoin and cefpodoxime for presumed urinary tract infections without clinical improvement.

CT imaging of the abdomen and pelvis revealed cystitis, left pyelitis, dilation of the left upper renal pole, and calyceal narrowing concerning for urothelial malignancy. She was scheduled for outpatient urologic evaluation but was admitted three days later due to worsening abdominal pain. On admission, she was afebrile and hemodynamically stable, with significant suprapubic tenderness and guarding. Laboratory studies showed normal blood counts and chemistries. Urinalysis again demonstrated significant pyuria with positive nitrites and leukocyte esterase. A vaginitis panel was positive for bacterial vaginosis and Candida, for which she received treatment.

A CT urogram raised concern for multifocal transitional cell carcinoma of the left upper renal pole. However, cystoscopy revealed severely inflamed bladder mucosa with friable whitish necrotic granulomas suspicious for genitourinary tuberculosis (GUTB). A left ureteral stent was placed. Bladder biopsy demonstrated non-caseating granulomas, and specimens were sent for acid-fast bacilli testing. An interferon-gamma release assay was indeterminate.

Shortly after the procedure, she developed fever, hypotension, leukocytosis, acute kidney injury, lactic acidosis, and acute hepatocellular injury with cholestasis. Imaging ruled out bladder perforation and confirmed appropriate stent placement. Despite empiric meropenem, her condition rapidly worsened with hypoxemia and confusion, requiring intubation and vasopressor support. Arterial blood gas revealed a PaO2 of 56 mmHg with a P:F ratio of 200, and chest imaging showed new bilateral infiltrates consistent with acute respiratory distress syndrome (ARDS).

Given high suspicion for disseminated tuberculosis, empiric RIPE therapy (rifampin, isoniazid, pyrazinamide, ethambutol) was initiated and meropenem discontinued. As respiratory failure progressed, she required prone positioning, intravenous glucocorticoids, and escalation to venovenous and subsequently venoarterial extracorporeal membrane oxygenation (ECMO), along with continuous renal replacement therapy. Her course was complicated by Burkholderia cenocepacia pneumonia and cardiac arrest due to massive bilateral pulmonary embolism.

Although initial sputum TB PCR and blood cultures were negative, urine TB PCR returned positive, and urine and bronchoalveolar lavage cultures ultimately grew Mycobacterium tuberculosis after three weeks. With continued RIPE therapy and supportive care, her condition gradually improved, and she was discharged on treatment for disseminated tuberculosis

Discussion

Sterile pyuria is common (13.9% in women, 2.6% in men) and often underinvestigated. It is not always sterile; infectious causes include sexually transmitted infections (gonorrhea, chlamydia, ureaplasma, trichomonas), fungal infections (Candida, Aspergillus), schistosomiasis, and genitourinary tuberculosis (GU TB). GU TB accounts for 13–27% of extrapulmonary TB 8 and is often indolent, causing irreversible damage (renal scarring, ureteral strictures, hydronephrosis, bladder fibrosis) by the time of diagnosis. It presents with suprapubic pain, dysuria, hematuria, and frequency, and initial workup may show only sterile pyuria. In patients from high TB-prevalence regions, GU TB should be in the differential and diagnosed with urine culture or bladder biopsy; urinary PCR has high sensitivity (94%) . ARDS is a rare but documented complication of disseminated or miliary TB, with mortality 28–78%, and can occur after urologic procedures in patients with active or undiagnosed TB. Clinicians should maintain high suspicion for GU TB in patients with sterile pyuria, especially from endemic regions, to prevent irreversible damage and mortality.

Conclusion

Genitourinary tuberculosis is a rare cause of chronic urinary or pelvic symptoms in low-endemicity regions. This report highlights the importance of clinical suspicion for such diagnosis in patients with sterile pyuria. Invasive urologic procedures may result in disseminated disease, leading to fulminant outcomes. Early recognition and timely initiation of antituberculosis therapy are crucial for improved survival.

Honorable Mention

Chest Pain Due to Diffuse Coronary Cameral Fistulas Draining into the Left Ventricle and Mimicking Acute Coronary Syndrome: A Case Report

Ranjit Sah, Nishanth Katukuri, Benjamin Horn, Angelos Karagiannis, Joshua Arkin

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Background

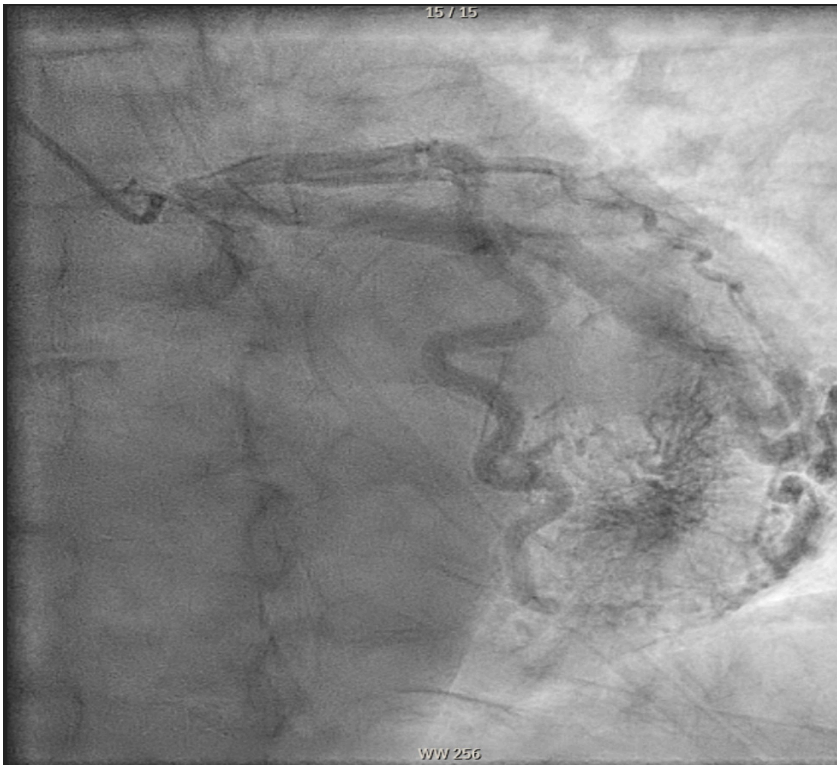
Coronary cameral fistulas are rare coronary anomalies in which one or more coronary arteries communicate directly with a cardiac chamber. Although often asymptomatic, clinically significant fistulas may cause myocardial ischemia through coronary steal physiology and can mimic acute coronary syndrome.

Case Presentation

An 84-year-old woman with atrial fibrillation on anticoagulation, hypertension, hyperlipidemia, prior cerebrovascular accident without residual deficit, hepatitis C–related cirrhosis now eradicated, and heart failure with preserved ejection fraction presented with acute shortness of breath and chest pain. Troponin rose from 17 ng/L to 740 ng/L and later peaked around 1500 ng/L, prompting initial treatment for non-ST-elevation myocardial infarction. However, recent coronary angiography had shown no obstructive coronary artery disease and instead demonstrated diffuse bilateral coronary cameral fistulas draining into the left ventricle through a large Thebesian venous network (Fig 1A) and Echo finding (Fig 1B). Her symptoms were ultimately attributed to coronary steal physiology from extensive coronary-to-left ventricular shunting. She was managed conservatively with rate control, cautious preload support, avoidance of nitrates, and reassessment for tertiary-center evaluation.

Conclusion

Diffuse coronary cameral fistulas draining into the left ventricle are rare and may present late in life with chest pain and marked troponin elevation despite nonobstructive coronary arteries. Recognition of this entity is important because management differs from typical plaque-rupture acute coronary syndrome and is driven largely by anatomy, hemodynamics, quality of life, and overall goals of care.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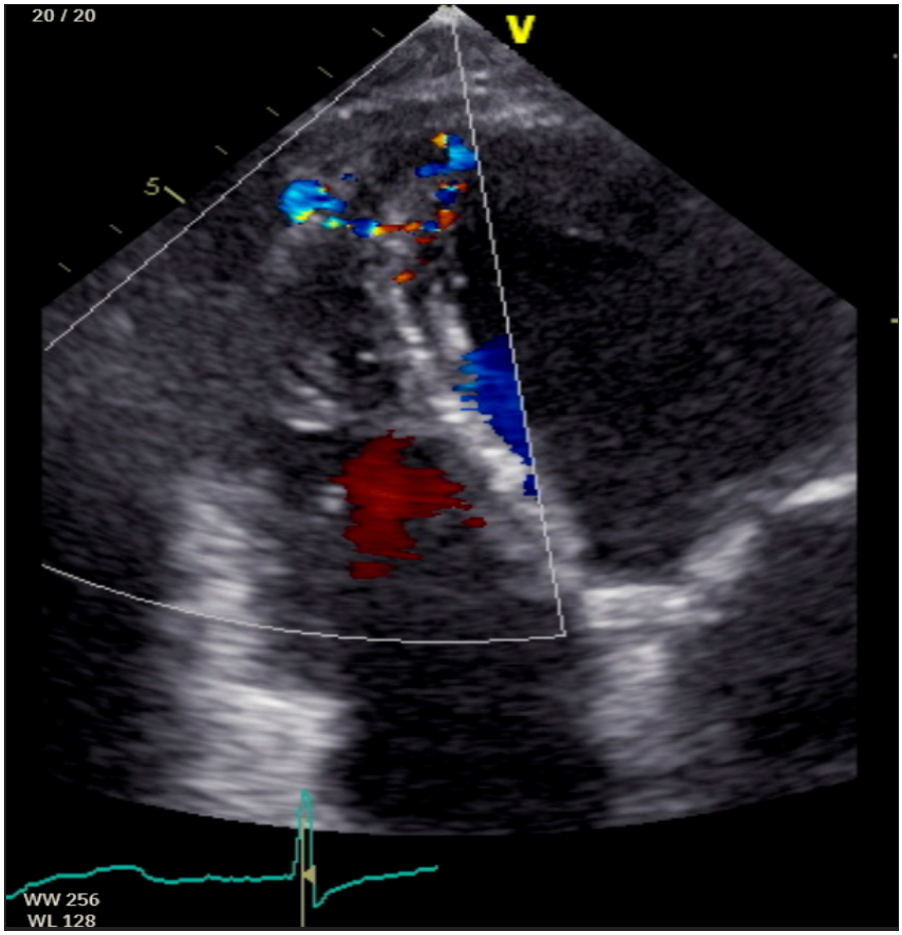
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Honorable Mention

Wernicke Encephalopathy in a Young Malnourished Woman: A Diagnostic Challenge

Nader Pahlevan, MD1, Ranjit Sah, MD1, Malaika Panchal, MD1, Navya Doddareddy MD1, Davinderpal Singh, MD2, David E Miller, MD3, Howard Kesselman, MD4

Background

Wernicke encephalopathy (WE) is an acute neurologic emergency caused by thiamine deficiency. Although classically associated with alcohol use disorder, a significant portion of cases occur in non-alcoholic settings including malnutrition, psychiatric illness, vomiting, and rapid weight loss. Diagnosis is clinical and frequently delayed, particularly when presentation mimics sepsis or encephalitis.

Case Overview

A 20-year-old woman with depression and anxiety was admitted after being found down for approximately 24 hours following 3–4 days of progressive behavioral changes and poor oral intake. She had a 30-pound unintentional weight loss over six months. On arrival, she was hypotensive, febrile, tachycardic, and encephalopathic. Labs showed lactate 4.1 mmol/L, creatine kinase 628 U/L, mild coagulopathy, thrombocytosis, and an anion gap metabolic derangement. Urinalysis showed pyuria and nitrites. CT head and CTA head/neck were unremarkable.

Given concern for meningitis or encephalitis, she received ceftriaxone, vancomycin, and acyclovir and was admitted to the ICU. Cerebrospinal fluid demonstrated normal glucose, mildly elevated protein, and no pleocytosis. Broad infectious evaluation (HIV, syphilis, viral panels, cultures) and autoimmune workup were negative. Antimicrobials were discontinued.

Brain MRI revealed symmetric T2/FLAIR hyperintensities involving the medial thalami, mammillary bodies, fornices, and periaqueductal gray matter without enhancement—findings highly suggestive of WE. Neurologic examination showed disorientation, bidirectionalhorizontal nystagmus, dysarthria, and generalized weakness without focal deficits.

High-dose intravenous thiamine was initiated with gradual improvement in mental status and resolution of neurologic findings. Lactate and metabolic abnormalities normalized. At last evaluation, she was fully oriented with a nonfocal examination.

Discussion

WE is underdiagnosed; autopsy studies suggest substantially higher prevalence than clinical recognition (Sechi and Serra, 2007). The classic triad (confusion, ataxia, ocular abnormalities) is present in a minority of patients, making reliance on complete triad insensitive (Galvin et al., 2010; Oudman et al., 2015). The Caine criteria improve diagnostic sensitivity and are recommended for both alcoholic and non-alcoholic patients (Galvin et al., 2010; Yin, H et al., 2019). MRI supports the diagnosis, with characteristic symmetric signal abnormalities in the medial thalami and mammillary bodies (Galvin et al., 2010). Current guidelines emphasize that WE is a clinical emergency requiring immediate parenteral thiamine without waiting for laboratory confirmation, particularly in patients with malnutrition or rapid weight loss (Patterson, E et al.,2025). Delayed treatment risks progression to irreversible Korsakoff syndrome. This case highlights the importance of wide diagnostic suspicion in a hemodynamically unstable patient with encephalopathy. In malnourished patients, empiric thiamine is a low-risk, high-yield intervention that should be administered early in the evaluation of undifferentiated encephalopathy.

Discussion

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encephalopathy.

Conclusion

WE should be considered in any patient with malnutrition and acute encephalopathy, even in the absence of alcohol use. Early recognition and prompt intravenous thiamine can prevent permanent neurologic sequelae.

Anesthetic Strategies for High-Risk Frozen Elephant Trunk Repairs in Chronic Type A Aortic Dissection: Lessons from Two Complex Cases

Shriya Sharma MD[1], Usha Vellayappan MD[1], Sankalp Sehgal MD[1]

Bsckground

Frozen elephant trunk (FET) repair is a hybrid technique for extensive aortic arch and descending aortic disease. Redo FET in patients with chronic dissections, prior arch repairs, and large aneurysms presents extreme anesthetic challenges, requiring hypothermic circulatory arrest, selective antegrade cerebral perfusion (SACP), complex cannulation, and multi-organ protection. Guidance for anesthetic management in this high-risk population is limited.

Case Presentation

We present two high-risk redo FET cases:

Case 1: 76M with prior Type A repair, carotid-subclavian bypass, CKD III, and ventricular arrhythmias. Chronic descending aortic aneurysm measured 6.7 cm (descending thoracic), with proximal descending aorta at 4.9 cm. Redo sternotomy, total arch replacement with Thoraflex hybrid graft, and aortic valve replacement were performed.

Case 2: 47M with prior Type A repair, CKD III, and hypertension. Chronic dissection with aneurysmal expansion of 6.6 cm thoracic and 9.4 cm abdominal aorta. Redo sternotomy and total arch replacement with Thoraflex graft via axillary and femoral cannulation were performed.

Discussion

Both cases used a physiology-guided, multidisciplinary approach integrating neuromonitoring, TEE, hemodynamic/metabolic surveillance, moderate hypothermia, and SACP. Postoperative care focused on preventing neurologic deficits, spinal cord ischemia, renal injury, and vasoplegia.

Key Intraoperative Metrics:

Parameters	Case 1	Case 2
CPB (min)	299	231
Cross clamp (min)	237	118
Circulatory arrest (min)	69	37
SACP (min)	23	37
Blood Products	FFP 2, PLT 2, K-Centra 1	FFP 3, PLT 2, K-Centra 1
Hospital stay (days)	17	10

Both patients were weaned from bypass without major neurologic or renal complications and discharged in sinus rhythm.

Conclusion

These cases demonstrate that carefully tailored, physiology-driven anesthetic management enables safe redo FET repair even in patients with extremely large aneurysms, offering critical guidance for anesthesiologists managing complex hybrid aortic surgery.

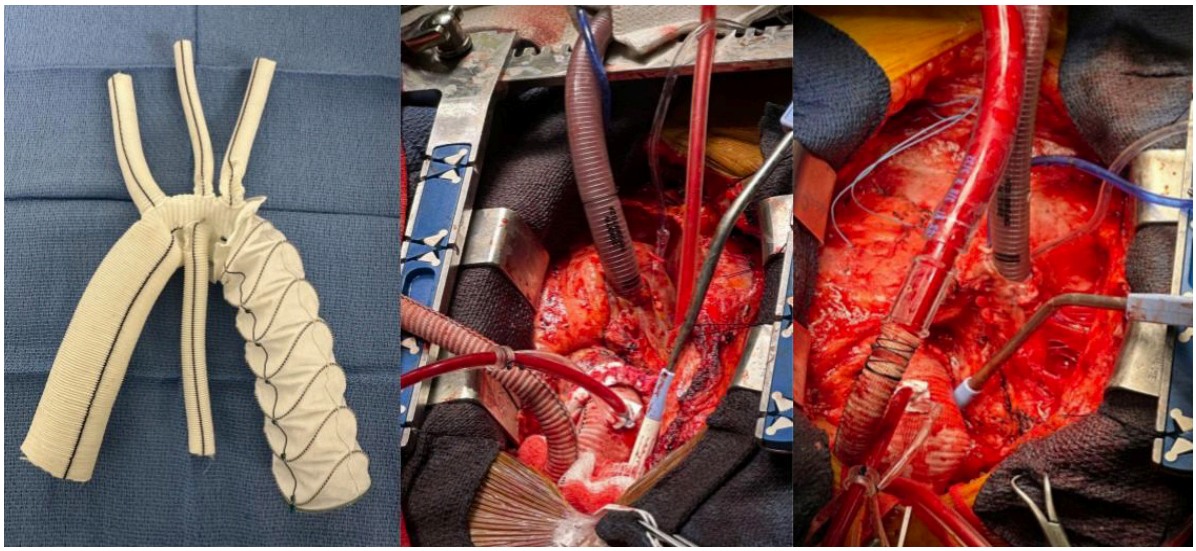

Figure 1: (a) Frozen elephant trunk (FET) hybrid graft device. (b) Intraoperative view of the implanted FET graft in total aortic arch reconstruction.

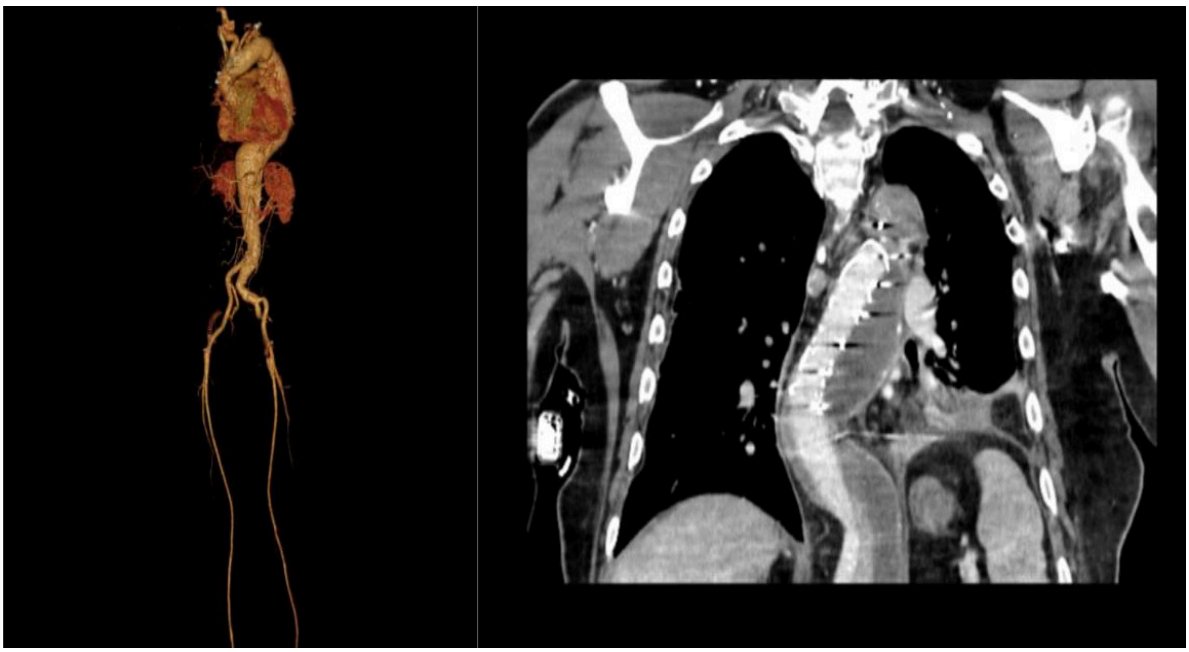

Figure 2: (a) Three-dimensional reconstruction demonstrating aneurysmal dilatation of the thoracic and abdominal aorta. (b) Postoperative CT images following FET graft placement, demonstrating graft position and aortic reconstruction.

Silencing the Storm: Stellate Ganglion Block as Rescue Therapy in Refractory Electrical Storm

Shriya Sharma, MD[1]; Fredric Gerges, MD[1]; Martin Acquadro, MD[1]

[1]Department of Anesthesiology and Pain Management, Boston Medical Center Brighton, Boston, MA, USA.

Introduction

Electrical storm, defined as ≥3 episodes of sustained ventricular arrhythmias within 24 hours, is a life-threatening condition often driven by heightened sympathetic activity. Standard therapies including antiarrhythmics, defibrillation, and mechanical circulatory support may fail or be limited by hemodynamic instability. Stellate ganglion block (SGB) has emerged as a potential adjunct by attenuating cardiac sympathetic tone.

Case Description

A 70-year-old female with ischemic cardiomyopathy and reduced ejection fraction presented with recurrent ventricular tachycardia (VT) after experiencing >30 implantable cardioverter-defibrillator shocks. She developed sustained VT requiring repeated defibrillation, multiple antiarrhythmic infusions (amiodarone, lidocaine, procainamide), and brief cardiopulmonary resuscitation. On transfer, she remained in unstable VT with intermittent loss of pulse despite maximal medical therapy. She was intubated, sedated, and supported with vasopressors. Given refractory electrical storm, an emergent ultrasound-guided left stellate ganglion block was performed at the bedside using 10 mL of 1% lidocaine at the C6 level. Ipsilateral Horner's syndrome confirmed successful blockade. Following SGB, ventricular arrhythmia burden decreased markedly, allowing hemodynamic stabilization and urgent coronary angiography. This revealed complete left circumflex occlusion requiring percutaneous coronary intervention with stenting. An intra-aortic balloon pump was placed for additional support, and the patient was transferred to the ICU with improved stability.

Discussion

SGB provides rapid sympatholysis by interrupting cardiac sympathetic outflow, thereby reducing arrhythmogenicity in electrical storm. Emerging multicenter data demonstrate significant reductions in VT/VF episodes and defibrillation burden within 24 hours of SGB. This case underscores the expanding role of anesthesiologists in performing time-sensitive, ultrasound-guided interventions beyond traditional analgesia.

Conclusion

SGB is a rapid, bedside, and effective rescue therapy for refractory ventricular arrhythmias, serving as a critical bridge to definitive management in hemodynamically unstable patients.

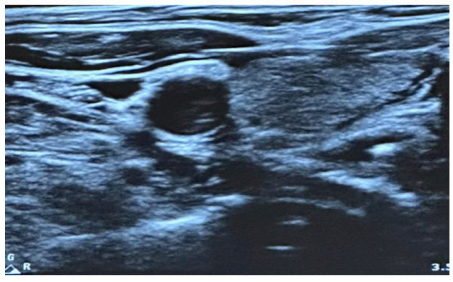

Figure 1: Ultrasound-guided left stellate ganglion block performed at the C6 level

Recurrent Catatonia in the Setting of Urinary Tract Infection and Medical Comorbidity: A Case Report and Literature Review

Paula Traugott,1,2 Rachel Mimbella,1,2 Jessica C Irizarry Flores,1,2 Helen H Kyomen1,2,3,4

Boston Medical Center-Brighton Department of Psychiatry,1 Boston University Chobanian and Avedisian School of Medicine,2 Tufts University School of Medicine,3 Harvard Medical School4

Introduction

Catatonia is a severe neuropsychiatric syndrome characterized by alterations in motor activity, affect, and autonomic function. Although often associated with primary mood or psychotic disorders, it can also occur secondary to neurologic or medical conditions, including systemic infections. It has a complex and incompletely understood pathophysiology, presents with a heterogeneous clinical picture, and its diagnosis relies primarily on observable signs. First-line management typically includes benzodiazepines and electroconvulsive therapy (ECT). We describe the case of a patient with recurrent, treatment-resistant catatonia in the context of complex medical comorbidities, particularly recurrent urinary tract infection (UTI).

Case Summary

This case describes a 60-year-old man with a long-standing psychiatric history of bipolar disorder, schizophrenia, recurrent catatonia, and major neurocognitive disorder, who presented to the emergency department after a psychosocial stressor precipitated the relapse of catatonia. During this admission, he developed Klebsiella pneumoniae UTI with Staphylococcus simulans bacteremia and later Pseudomonas aeruginosa urosepsis, in the context of mixed central and nephrogenic diabetes insipidus likely related to long-term lithium therapy. The patient's catatonia proved refractory to very high dose lorazepam but improved with an intensive, multimodal regimen including intravenous and enteral benzodiazepines, zolpidem, memantine, and aggressive treatment of infection and electrolyte abnormalities. He ultimately regained baseline function with a substantial reduction in the Bush-Francis Catatonia Rating Scale (BFCRS) score and was discharged on a slow taper of benzodiazepines and zolpidem.

Discussion

Catatonia is predominantly assessed through observable or elicitable signs, and its diagnosis requires the presence of at least three of the following features: stupor, mutism, catalepsy, waxy flexibility, negativism, posturing, mannerism, stereotypy, agitation not influenced by external stimuli, grimacing, echolalia, or echopraxia. The BFCRS and a favorable response to a lorazepam challenge can further support diagnostic confidence. Catatonia can be triggered or worsened by a diverse range of medical disorders. This phenomenon has been described within the para-infectious encephalopathy framework, defined as a global neurological decline linked to infection, in which systemic infection and inflammatory cytokines modulate dopaminergic and glutamatergic pathways. Current evidence suggests that GABA-A receptor hypoactivity, dopamine D2 receptor hypoactivity, glutamatergic NMDA receptor hyperactivity, and increased serotonergic 5-HT1A receptor activity play important roles in catatonia pathophysiology. From a laboratory perspective, certain biomarkers, immunological abnormalities, and a broad range of autoantibodies have also been associated.

First-line treatment for catatonia involves benzodiazepines and ECT. When these are unavailable, ineffective, or only partially effective, several alternative management strategies may be considered, including NMDA receptor antagonists, anticholinergics, antiseizure medications, second-generation antipsychotics, zolpidem, dopaminergic agents, and neuromodulation techniques.

Conclusion

This case describes a 60-year-old man with a long-standing psychiatric history of bipolar disorder, schizophrenia, recurrent catatonia, and major neurocognitive disorder, who presented to the emergency department after a psychosocial stressor precipitated the relapse of catatonia. During this admission, he developed Klebsiella pneumoniae UTI with Staphylococcus simulans bacteremia and later Pseudomonas aeruginosa urosepsis, in the context of mixed central and nephrogenic diabetes insipidus likely related to long-term lithium therapy. The patient's catatonia proved refractory to very high dose lorazepam but improved with an intensive, multimodal regimen including intravenous and enteral benzodiazepines, zolpidem, memantine, and aggressive treatment of infection and electrolyte abnormalities. He ultimately regained baseline function with a substantial reduction in the Bush-Francis Catatonia Rating Scale (BFCRS) score and was discharged on a slow taper of benzodiazepines and zolpidem.

Malignant Melanoma of the Left Heel: A Case Report

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Background

Malignant melanoma of the foot is an uncommon but aggressive malignancy that is frequently diagnosed at advanced stages due to delayed recognition and its ability to mimic benign plantar lesions. Lesions involving the plantar heel may resemble chronic wounds, calluses, or traumatic lesions, often leading to delayed diagnosis and treatment. Early biopsy and multidisciplinary oncologic evaluation are essential for appropriate staging and management.

Case Presentation

A 59-year-old male with a past medical history significant for sigmoid diverticulitis, prior liver abscess (2011), obstructive sleep apnea, and iron-deficiency anemia presented to the emergency department with a left plantar heel mass that had been present for greater than one year. The patient reported progressive enlargement of the lesion with associated discomfort. Physical examination revealed a raised, hypergranular mass involving the plantar aspect of the left heel. Due to concern for malignancy, an urgent consultation with hematology/oncology was obtained and staging imaging with CT and PET scans was performed. The patient subsequently underwent surgical excision of the left heel mass on November 18, 2025.

Discussion

Histopathologic evaluation confirmed malignant melanoma of the plantar heel with a tumor diameter of at least 3 cm and a Breslow thickness of 13 mm. Pathology demonstrated partial ulceration with deep margins involved by tumor, while the lateral epithelial margins were difficult to clearly identify. There was no evidence of lymphovascular invasion or perineural invasion. Molecular testing was negative for BRAF V600E mutation. Staging imaging demonstrated FDG-avid lymphadenopathy involving the left inguinal and retroperitoneal regions with additional findings suspicious for metastatic disease. FDG uptake was also noted within the colon. Due to the patient's history of diverticulitis and prior sigmoid abscess, the patient underwent sigmoidectomy, with pathology demonstrating granulomatous changes without evidence of malignancy. The patient is currently undergoing multidisciplinary oncologic follow-up at the Dana-Farber Cancer Institute with a scheduled follow-up appointment most recently on April 6th to further evaluate staging and discuss systemic therapy options including immunotherapy.

Conclusion

This case highlights the aggressive nature and delayed presentation of plantar heel malignant melanoma. Persistent or atypical plantar lesions should prompt early biopsy to avoid delays in diagnosis. Multidisciplinary management and systemic staging are essential, as patients may present with regional or distant metastatic disease at the time of diagnosis. Early recognition and coordinated oncologic care are critical to optimizing patient outcomes.

Rapid Onset of Antidepressant Effects with Ketamine in a Patient with Chronic Refractory Depression: A Case Report

Langely Chaparro MD 1; Phung Vough MD1; Logan Scoon MD1; Paul Demby MD1; Martin Acquadro MD1.

1Department of Anesthesiology, Critical Care and Pain Medicine, Boston Medical Center – Brighton. Boston, MA.

Introduction

Treatment-resistant depression (TRD) remains a major clinical challenge, affecting approximately 30% of patients with major depressive disorder (MDD) and contributing to substantial functional impairment and risk of suicidality. Traditional antidepressants, including selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs), often require weeks to months for therapeutic effect and fail in a significant subset of patients. Ketamine, an N-methyl-D-aspartate (NMDA) receptor antagonist originally developed as an anesthetic, has demonstrated rapid-acting antidepressant properties, producing significant symptom relief within hours to days of administration. This effect is believed to result from enhanced glutamatergic neurotransmission, promotion of synaptogenesis through activation of the mTOR pathway, and increased expression of brain-derived neurotrophic factor (BDNF), helping to restore neural connectivity disrupted in chronic depression.

Case Presentation

28-year-old female with a history of TRD, Bipolar II disorder, post-traumatic stress disorder (PTSD), and generalized anxiety disorder, who experienced multiple failed antidepressant trials, including SSRIs, SNRIs, and adjunctive mood stabilizers. She had a prior history of suicide attempts, including an intentional overdose, and hospitalizations for psychotic and suicidal behavior. She was referred for ketamine infusion therapy for persistent depressive symptoms despite ongoing pharmacologic management with cariprazine, fluoxetine, and methylphenidate. A structured ketamine protocol was implemented: 50 mg intravenous ketamine infusions twice weekly for two weeks, followed by weekly infusions for an additional two weeks. The patient tolerated all sessions without significant adverse effects. Following the second infusion, she reported noticeable mood improvement, decreased anhedonia, and improved functioning. By the completion of the four-week series, her PHQ-9 score had decreased from 19 to 4, indicating remission of depressive symptoms. She also reported a marked reduction in hopelessness and suicidal ideation, describing herself as feeling “happy for the first time in a very long time.”

Discussion

This case illustrates several key clinical lessons. First, ketamine can induce rapid and robust antidepressant effects even in patients with complex psychiatric comorbidities and a history of treatment resistance. Second, structured infusion protocols with careful monitoring are feasible and well-tolerated in outpatient settings. Third, ketamine may serve as a bridge to longer-term management strategies by providing rapid symptom relief and reducing acute suicidality. Clinicians should weigh the benefits against potential risks, including dissociation, hemodynamic changes, and unknown long-term effects, while considering ketamine as a viable option for patients failing conventional therapies. This case supports the growing evidence for ketamine utility in TRD and highlights its potential role in multidisciplinary psychiatric care.

Annual Research Day Commitee 2026

Our sincerest gratitude goes out to those who participated in planning this year's Annual Research Day, hosted by the Department of Psychiatry

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