

# CARDIOLOGY

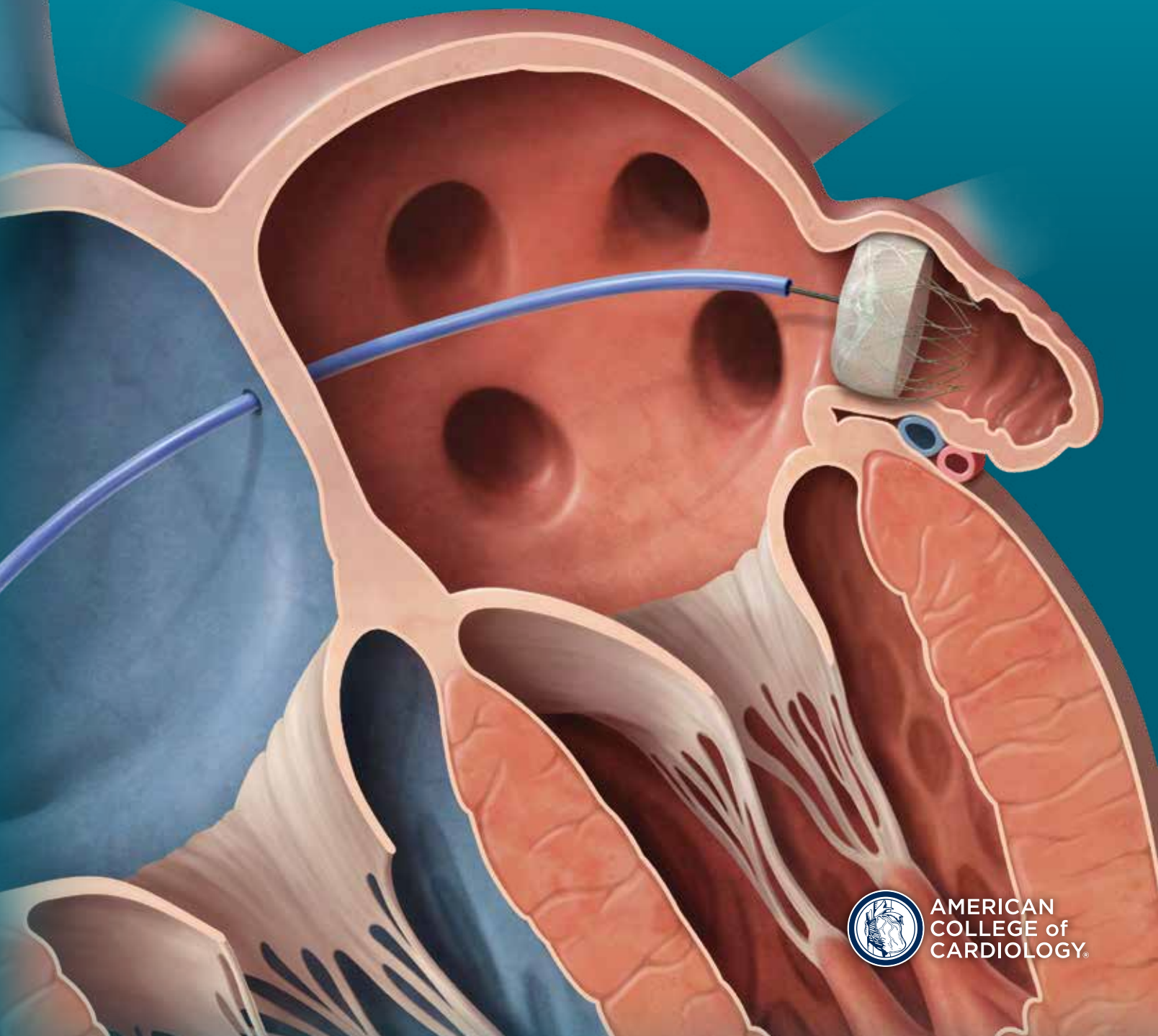


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VOL. 55 | NUMBER 8

## STROKE PREVENTION IN AFIB: DEFINING THE ROLE OF LAAO



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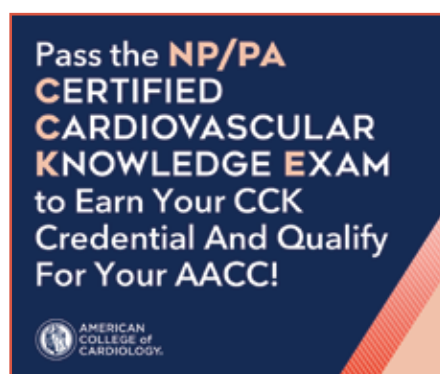
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# Mother Nature DOES NOT Offer a Free Lunch!



Peter C. Block  
MD, FACC



John Gordon Harold  
MD, MACC

It takes longer than we'd like to gain confidence in new percutaneous technology. Twenty years after Andreas Grüntzig's first coronary PTCA, we were still debating whether stents were good or bad. Now we're wondering about a return to balloons alone - albeit drug-coated. So it has been with left atrial appendage occlusion (LAAO).

In 1949, New York surgeon **John Madden, MD**, reported on two patients with mitral stenosis and recurrent systemic emboli, showing that resected atrial appendages contained mural thrombi. In patients with cardiac mural thrombi, 90% were in the left atrial appendage. Fast forward to the Watchman trials 20 years ago - and to today - and we're still not entirely sure which patients to select for percutaneous LAAO.

Mother Nature reminds us there are upsides and downsides to both percutaneous and medical therapies. This month's cover story underscores that tension by summarizing recent trial outcomes of LAAO vs. novel oral anticoagulants (NOACs) in patients with atrial fibrillation (AFib). It's complicated!

The recent CHAMPION-AF trial, with high NOAC adherence, showed LAAO with Watchman FLX was noninferior to NOACs. But bleeding risk still matters, even when lower with Watchman FLX, and some patients have embolic recurrence. There's no free lunch! Critics note that noninferiority should have been more robust in CHAMPION-AF and that last year's CLOSURE-AF trial

failed to show noninferiority in similar patients. Overall, patients with AFib still need individualized assessment of LAAO vs. NOAC risks and benefits.

Two patient groups stand out as strong candidates for LAAO: those with previous intracranial hemorrhage (ICH) and those with "breakthrough" stroke on adequate NOACs. A 2025 meta-analysis of patients with AFib and prior ICH in the NCDR LAAO Registry found that, during follow-up and against risk-score predictions, LAAO significantly reduced ischemic stroke and bleeding events.

For "breakthrough" ischemic stroke, the 2024 STR-OAC LAAO analysis examined patients with recurrent ischemic stroke despite adequate oral anticoagulation. Recurrence was higher than expected with continued anticoagulation. Adding LAAO reduced the annualized ischemic stroke rate to 2.8% per patient-year vs. 8.9% in controls. As a bonus, 67% of LAAO patients discontinued anticoagulation entirely, while 33% continued it as adjunctive therapy.

Finally, we need to keep looking ahead. What about the combination of AFib ablation and LAAO now gaining traction? Madden opened the native mitral valve to relieve congestive symptoms and excised the LAA to prevent embolic events. Why not percutaneously ablate the source of AFib and consider LAAO to prevent embolic events if AF recurs? Combination therapy makes sense. Stay tuned! ■

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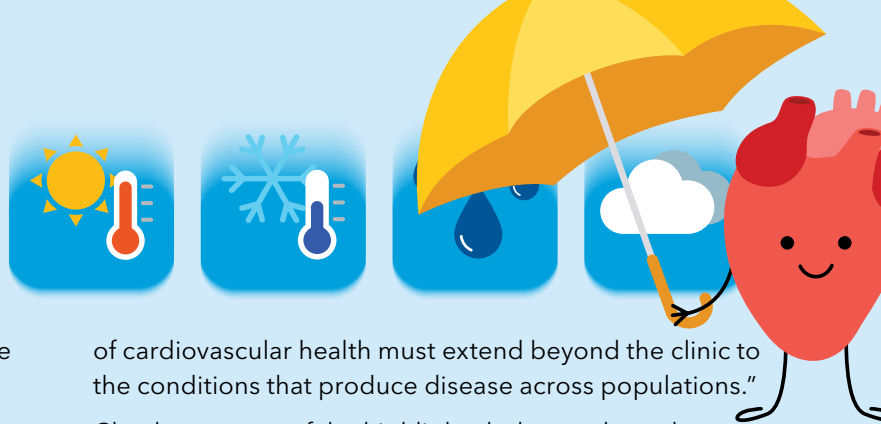
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# WHEN ENVIRONMENT MEETS CARDIOLOGY



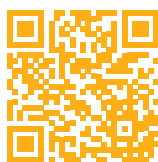
"Cardiovascular leadership has 2 obligations: 1) to care well for the person who arrives at our door; and 2) to reduce the number who need to come through it," writes JACC Editor-in-Chief **Harlan Krumholz, MD, SM, MACC**, in an Editorial Comment kicking off a special issue dedicated to environmental cardiology. "Our view

of cardiovascular health must extend beyond the clinic to the conditions that produce disease across populations."

Check out some of the highlights below and use the QR codes to explore the full issue, read specific papers and access the new Environmental Cardiology topic collection at [JACC.org](https://JACC.org).

## 1 in 3

The number of cardiovascular deaths worldwide attributable to environmental exposures. **Scan the QR code** to access a special JACC Focus Issue and learn how environmental factors are shaping cardiovascular health and what actions can help reduce risk.



## PM<sub>2.5</sub>

Air pollution, specifically chronic PM<sub>2.5</sub> exposure, was linked with coronary endothelial dysfunction in individuals with nonobstructive coronary artery disease, in an original research study out of the Mayo Clinic. Two other studies published in the special JACC Environmental Cardiology issue also shed light on PM<sub>2.5</sub> impacts on heart health. **Scan the QR code** to access all three studies (and more) in the new JACC Environmental Cardiology topic collection.



**11.5%** Compound exposure to extreme heat and substantial fire-source air pollution was associated with an 11.5% increase in cardiovascular mortality, based on an assessment of nearly 6 million cardiovascular-related death records from multiple countries. **Scan the QR code** for more.



**2-6** The number of days following cold spells associated with a higher risk of heart failure (HF) hospitalization, based on a Swedish study presented at ESC Congress 2026 and published in JACC. In other findings, higher temperature exposure was linked to a higher risk of HF over zero to three days. There was no association between heat wave exposure and HF hospitalization.



**Scan the QR code** to read more.

## LIVE AT ESC CONGRESS: FROM EXPOSURE TO ACTION

The impact of environmental stressors on cardiovascular health was part of a special ESC and JACC Joint Session at ESC Congress 2026, exploring why environmental cardiology has emerged as a critical clinical priority. Speakers examined the cardiovascular impacts of air pollution, wildfire smoke, temperature extremes, and the risks associated with specific PM<sub>2.5</sub> constituents and combined environmental exposures. Attendees also gained insight into the latest evidence and practical priorities for research and prevention and they were able to engage with experts like Krumholz around clinical actions needed to address the growing cardiovascular burden of environmental threats.



## In Memoriam: ACC Past President Robert L. Frye, MD, MACC

The ACC mourns the loss of **Robert L. Frye, MD, MACC**, a distinguished physician, investigator, educator and leader whose career helped shape modern cardiovascular medicine and the College. Frye, who served as ACC President from 1991-1992, is remembered for more than seven decades of service to patients and the profession.

Frye earned his medical degree from Vanderbilt University School of Medicine and completed his residency at Johns Hopkins Hospital in Baltimore. There, he first met **Eugene Braunwald, MD, MACC**, a fellow resident who later recruited him as the first physician research fellow and clinical associate at the National Institutes of Health (NIH). Frye contributed to seminal physiological studies on Starling's law of the heart and hypertrophic cardiomyopathy.

"Dr. Frye holds a unique place in the history of cardiovascular medicine," said **Valentin Fuster, MD, PhD, MACC**. "As the first Braunwald Fellow at the NIH, he helped lay the foundation for a generation of clinical discovery that transformed our field. His intellect, collegiality and unwavering commitment to patients and science leave a lasting legacy that continues to inspire us all."

Frye spent much of his career at the Mayo Clinic in Rochester, MN, where he practiced, taught and became one of the institution's most respected cardiovascular leaders. He cared for countless patients while mentoring trainees, guiding colleagues and advancing standards of cardiovascular care.

"In a world bereft of giants, we have lost another one," said ACC Past President

**David R. Holmes**

**Jr., MD, MACC**. "He superseded all the metrics which define giants. He was incredibly skilled in relating to patients, families, friends, medical students, trainees and colleagues from around the world. It is hard to imagine a world without him, without all of the wondrous humility and honesty that he always brought with him."

Frye also devoted significant energy to the ACC, serving in numerous leadership roles, including as chair of the Scientific Session Program Committee and a member of the Nominating Committee.

As ACC President, Frye championed the College's responsibility to provide leadership for the profession, ensure high-quality and accessible cardiovascular care and continually act in the best interests of patients. His extraordinary contributions were recognized with the ACC Distinguished Fellowship Award in 1995.

"Dr. Frye's legacy lives on through the discoveries he advanced, the physicians he mentored and the profession he helped lead," said ACC President **Roxana Mehran, MD, FACC**.

**Scan the QR code** to read more. ■



## Registration Countdown: ACC.27-WCC Opens This Month

Registration for ACC.27 Together With WCC (ACC.27-WCC), in Houston, TX, from April 10-12, 2027, opens this month.

The premier event will unite the global cardiovascular community in Houston for an unparalleled experience of discovery, connection and professional growth. Don't miss the hottest late-breaking science, focused pre-conferences on today's most pressing topics, hands-on learning opportunities and the latest advances transforming patient care.

Plus, ACC.27-WCC provides unique opportunities to engage with world-renowned experts, expand your network, celebrate colleagues and members across the profession, and help shape the future of cardiovascular medicine together.

Exclusive Member Registration opens on Wednesday, Oct. 14, followed by general Early Bird Registration on Wednesday, Oct. 28.

**Scan the QR code** to learn more. ■



## Inaugural Fellow Focuses on Rural Gaps in Congenital Heart Care

**D**iagnosing and managing heart disease can be challenging in any setting, but rural communities face distinct barriers, including long travel distances and limited access to specialty care. For **Plicy Perez-Kersey, MD**, the inaugural recipient of ACC's Thad and Gerry Waites Rural Cardiovascular Research Fellowship Award, advancing research focused on improving cardiovascular outcomes in underserved rural populations is key to addressing these challenges.

For her one-year fellowship, Perez-Kersey, a pediatric cardiologist and clinical instructor at Seattle Children's Hospital and the University of Washington School of Medicine, is focusing on maternal-fetal care and the social factors affecting both children and adults with congenital heart disease.

"Despite how relatively common congenital heart disease is, there are still significant geographic, racial and socioeconomic disparities," she says. Addressing these disparities, especially when it comes to expectant mothers and infants, is important because timely fetal diagnosis can support safe delivery planning and rapid stabilization of infants with critical congenital heart disease.

ACC's Rural Cardiovascular Research Fellowship offers up to \$70K in funding and support for a Fellow in Training or early-career cardiologist passionate about advancing cardiovascular health in rural and underserved communities. ■



**Scan this QR code** to read more about Perez-Kersey's work.



**Scan this QR code** to learn more about the Fellowship, providing funding and support for an FIT or early-career cardiologist interested in advancing rural CV health. The deadline to apply for the 2027 Fellowship is Oct. 22.

## ACC Leads Joint Statement on TAVR NCD

**T**he ACC, along with the Society of Thoracic Surgeons (STS) and Society for Cardiovascular Angiography & Interventions (SCAI), released a joint statement on the TAVR national coverage determination (NCD) finalized by the Centers for Medicare and Medicaid Services (CMS) in September.

The statement highlights the critical need "to preserve the quality framework" that has contributed to TAVR's success as it expands into new populations of patients with severe aortic stenosis, including the "preservation of the heart team, continued collaboration across specialties, collection of real-world evidence, outcomes monitoring and continuous quality improvement."

It also underscores the importance of "participation in national registries, externally

benchmarked quality programs and rigorous outcomes reporting."

"The ACC, STS and SCAI appreciate CMS' efforts to evolve Medicare coverage for TAVR and enhance access to more patients as the evidence supporting this therapy continues to grow," said ACC President **Roxana Mehran, MD, FACC**, STS President **Vinay Badhwar, MD, FACS, FACC**, and SCAI President **J. Dawn Abbott, MD, MSCAI**. "The societies will continue to support the STS/ACC TVT Registry and other quality initiatives that promote evidence generation, patient safety, continuous improvement and health care value across the cardiovascular community."

Visit [ACC.org/Advocacy](https://www.acc.org/Advocacy) for more on the TAVR NCD. ■

## JACC Journals: Live at ESC Congress 2026

The science didn't stop at the podium. At ESC Congress 2026, JACC Journals simultaneously published nearly 60 studies across Hot Lines, Late-Breaking Clinical Trials and other major presentations. Here are a few standout highlights. **Scan the QR code** to view the complete collection, and don't miss the ESC Congress feature on page 12.



## REBOOT-PARADOX: TAVR vs. OMT in Symptomatic pLFLG

Despite premature termination, REBOOT-PARADOX offered rare randomized, long-term data on whether TAVR improves survival vs. optimal medical therapy (OMT) in symptomatic patients with paradoxical low-flow, low-gradient aortic stenosis (pLFLG).

The trial randomized 120 patients (median age 82 years; 53% women) 2:1 to TAVR or OMT. In the OMT group, 19 crossed over to TAVR, primarily because of symptom progression.

All-cause death, the primary endpoint, occurred in 29% and 37% of the TAVR and OMT groups two years after enrollment of the last patient. Five-year mortality was also lower with TAVR (~45% vs. ~57%). TAVR was associated with improved symptoms and fewer rehospitalizations, with no differences in functional capacity or quality of life.

Enrollment stopped after 120 of the planned 783 patients because of the COVID pandemic, leaving the study markedly underpowered. "As a result, findings

did not demonstrate a mortality benefit with TAVR, but it also could not establish equivalence or exclude a clinically meaningful survival benefit," said **Aakriti Gupta, MD, MSc, FACC**, an executive associate editor of JACC.

However, the randomized design, extended follow-up and frequent crossover offer insight into the clinical course of immediate TAVR vs. an initially conservative strategy.

"REBOOT-PARADOX provides the first randomized evidence in a difficult and understudied population, identifies a meaningful signal for reduced morbidity with earlier TAVR, and simultaneously demonstrates why correcting the valve alone may not normalize the prognosis," said Gupta. ■



## Short-Term DOAC Therapy and Post TAVR HALT

A three-month DOAC regimen after successful TAVR substantially reduced hypoattenuated leaflet thickening (HALT) during treatment vs. single antiplatelet therapy (SAPT), based on NOTION-4 trial findings. However, the effect had diminished about nine months after DOAC therapy was stopped.

Researchers randomized 352 patients without an indication for oral anticoagulation after successful TAVR to lifelong SAPT or three months of DOAC followed by lifelong SAPT. The primary endpoint was HALT prevalence at 12 months.

At three months, HALT was observed in about 32% and 12% of the SAPT and DOAC groups, respectively.

At one year, among patients with available CT scans, the difference was smaller (32% SAPT vs. 28% DOAC). The combined risk of all-cause death, stroke or major/life-threatening bleeding at 12 months was 2.3% with SAPT vs. 8.2% with DOAC.

"... because the short-term reduction in HALT with DOAC-3m was not associated with a clinical benefit - and clinical events occurred numerically more frequently in the DOAC group - our findings support current guidelines that recommend against the routine use of DOACs after TAVR in patients without another indication for oral anticoagulation," write **Troels Højsgaard Jørgensen, MD, PhD**, et al. ■



## CV Risk Factors May Guide Specialty Care in Prostate Cancer



Uncontrolled modifiable cardiovascular risk factors, including suboptimal cholesterol, high blood pressure and diabetes, may help identify patients with prostate cancer who are most likely to benefit from routine cardiovascular care, according to RADICAL PC-2 findings.

The trial enrolled nearly 2,500 participants with prostate cancer or receiving androgen-deprivation therapy at increased cardiovascular risk. Prespecified subgroup analyses assessed whether certain groups derived greater benefit from specialist referral. Follow-up occurred at three, six, 12, 18 and 24 months, then annually through study end.

Primary outcomes included a hierarchical composite of cardiovascular death, myocardial infarction (MI), stroke, heart failure (HF), suboptimal cholesterol and systolic BP control, evaluated using the win ratio, plus time to cardiovascular death, MI, stroke or HF.

Patients referred to a cardiologist or internist for structured cardiovascular risk and lifestyle management, smoking cessation, statin therapy and BP-lowering medication had more favorable outcomes overall, largely driven by improved cholesterol control. Rates of primary outcome events did not differ.

By risk factor, treatment effect differed by baseline total cholesterol ( $\leq 4$  mmol/L vs.  $> 4$  mmol/L) and BP status (SBP  $\geq 130$  mm Hg or DBP  $\geq 80$  mm Hg vs. BP  $< 130/80$  mm Hg). The diabetes interaction did not reach statistical significance, although effect estimates suggested a potential difference by diabetes status.

"This important international study helps establish an evidence base for who benefits from cardiovascular and internist management of risk, and how," said **Bonnie Ky, MD, FACC**, editor-in-chief of *JACC: CardioOncology*. ■

## First Medical Contact in ACS: NCDR and the Latest Guidelines



**A** *JACC: Advances* Viewpoint examines challenges in implementing revisions to the definition of first medical contact (FMC) introduced in the 2025 ACC/AHA ACS Guideline and their implications for NCDR data collection, specifically ACC's Chest Pain – MI Registry.

The updated FMC definition shifts the starting point from when EMS arrives at a patient's side to when a health care professional capable of obtaining and interpreting an ECG first evaluates the patient. While intended to improve precision, the change introduces new challenges for capturing FMC data accurately within the registry, according to Registry Steering Committee Chair-Elect **Nathaniel R. Smilowitz, MD, MS, FACC**, and colleagues.

"Evolving, narrower definitions of the FMC data element complicate assessments of quality of [myocardial infarction (MI)] care and may obscure true prehospital ischemic times and opportunities for performance improvement," write Smilowitz, et al.

The authors also note potential implications for patients who self-transport to the ED, where delays in care may be overlooked if MI is

not recognized during triage.

Given these challenges, Smilowitz and colleagues maintained the say that the existing Chest Pain – MI Registry Data Dictionary definition of FMC as the "date and time when the patient was first evaluated by EMS prior to arrival at the first facility" for patients transported by EMS will be maintained.

"Measuring performance based on the time of first EMS arrival provides a standardized, objective timestamp that can be consistently documented across EMS agencies," they write. "The arrival time of EMS with capabilities of ECG interpretation can then be recorded as an ancillary measure."

According to the authors, this approach supports quality improvement across prehospital and hospital care, promotes EMS-hospital coordination, and emphasizes reducing total ischemic time rather than focusing on a single prehospital process. ■

Smilowitz NR, Gunderson MR, Buck C, et al. *JACC Adv*. 2026;Sept 14:doi.org/10.1016/j.jacadv.2026.103241.

## ACACIA-HCM: Aficamten Benefits Symptomatic Nonobstructive HCM

**A**ficamten significantly improved exercise capacity and self-reported health status compared with placebo in patients with symptomatic nonobstructive HCM at 36 weeks, according to ACACIA-HCM, presented at ESC Congress 2026 and simultaneously published in *NEJM*.

A total of 258 patients were randomly assigned to aficamten (starting dose 5 mg; maximum dose 20 mg) or placebo for up to 72 weeks. Mean age was 55 years and more than half were women.

At 36 weeks, the change from baseline in the KCCQ-CSS was 11.4 points with aficamten vs. 8.4 points with placebo. The mean change in peak oxygen uptake per kilogram of body weight per minute was 0.64 with aficamten and -0.03 with placebo.

Aficamten significantly improved secondary endpoints, including NYHA functional class, submaximal exercise performance and NT-proBNP.

Researchers noted that “despite the phenotypic variety in patients with nonobstructive HCM, prespecified subgroup analyses showed consistency of the treatment effects and generalizability of these findings across the spectrum of patients.”

Regarding safety, LVEF <50% occurred more often with aficamten than placebo (10.5% vs. 0.8%) but was managed with dose adjustment. Serious adverse events occurred in 20% of patients receiving aficamten vs. 15% receiving placebo.

“The ACACIA-HCM trial provides positive news for patients with symptomatic nonobstructive HCM,” said **Ahmad Masri, MD, FACC**. “For the first time, we have shown clinically meaningful improvements in symptoms and exercise capacity with a treatment that targets the cause of the disease.” ■

## CARDIO-TTRansform: Eplontersen Misses Primary Endpoint

**E**plontersen, a once-monthly transthyretin gene silencer, did not significantly reduce cardiovascular mortality or recurrent cardiovascular events vs. placebo in patients with transthyretin amyloidosis with cardiomyopathy (ATTR-CM), according to results from the CARDIO-TTRansform trial presented at ESC Congress 2026 and simultaneously published in *NEJM*.

The trial enrolled 1,432 patients with wild-type or hereditary ATTR-CM at 130 centers across 20 countries and randomized them to receive eplontersen 45 mg or placebo by subcutaneous injection every four weeks. Participants' average age was 72 years, nearly 10% were women and 57% were receiving stabilizer therapy at baseline.

At up to 140 weeks, eplontersen did not significantly reduce cardiovascular mortality and recurrent cardiovascular events vs. placebo, despite transthyretin suppression. Overall, 381 primary endpoint events

occurred among 210 patients receiving eplontersen vs. 392 events among 231 patients receiving placebo.

Although the trial did not meet its primary efficacy endpoint, researchers noted a nominal statistical difference in primary composite endpoint events among a prespecified subgroup of patients not receiving baseline stabilizer therapy.

“Primary results appeared to be influenced by baseline stabilizer use, with no clear benefit in patients on background stabilizer therapy, while fewer primary endpoint events occurred with eplontersen in patients not receiving a stabilizer,” said **Mathew S. Maurer, MD, FACC**.

Maurer and colleagues said the findings add to evidence on TTR-lowering strategies in ATTR-CM, while underscoring the need for new therapies to improve prognosis in ATTR-CM. ■

**ESC CONGRESS  
2026 HUB**

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## Step By Step: A Practical Path to CV Risk Prevention

**P**hysical inactivity remains a major, modifiable driver of cardiovascular (CV) risk, despite well-established evidence that regular physical activity reduces all-cause and CV disease mortality, among other health benefits.<sup>1,2</sup> Yet in the U.S., only four in five adults meet recommended activity levels.<sup>3,4</sup> Current recommendations call for 150-300 minutes of moderate-intensity aerobic activity or 75-150 minutes of vigorous activity each week or an equivalent combination.<sup>2</sup>

For clinicians, the challenge is translating this into simple, attainable goals to help patients move more.<sup>3,4</sup>

The gaps in physical activity vary meaningfully across the U.S., likely reflecting structural barriers including limited transportation and less access to safe, convenient places for exercise.<sup>6</sup> These disparities underscore the need for flexible, low-cost activity goals that clinicians can tailor to patients' environments, baseline function and daily routines.

### Prescribe a Step Count

A daily step count has emerged as a practical, patient-centered metric that clinicians can use to assess

activity, guide counseling and monitor progress. A strong dose-response relationship has been shown between higher step counts and improved CV outcomes and all-cause mortality.<sup>7-9</sup>

Just 2,800 steps a day was associated with an 8-11% reduction in all-cause and CV disease mortality.<sup>7</sup> Larger gains were seen at 7,000-8,800 steps a day, associated with a 50-60% lower risk of CV disease incidence and all-cause mortality.<sup>7,8</sup> Benefits appear to plateau after roughly 6,000-8,000 steps a day, although 10,000 steps remained associated with lower all-cause mortality vs. lower step counts.<sup>7,8</sup>

A reasonable counseling target for many patients is 7,000 steps a day, considering no significant additional risk reduction in CV disease mortality was observed above this step count. Lower incremental goals may be appropriate for those who are older, deconditioned or facing mobility limitations.<sup>7,8</sup> While sex-based differences have not been observed in middle-aged adults,<sup>8,10</sup> optimal thresholds may vary by age,<sup>7,11</sup> with older women showing CV and mortality benefit at >4,000 steps a day.<sup>11</sup>



Walking intensity also matters. Higher step cadence was associated with lower mortality risk even after accounting for total steps.<sup>7</sup> Together, these findings support incorporating step goals into routine CV prevention conversations as a practical complement to time-based exercise recommendations.

Step counts are easy to understand, objectively measurable and actionable at the point of care, particularly for patients who face socioeconomic or environmental barriers to structured exercise, including limited access to safe outdoor spaces or competing work-life demands.<sup>3,6</sup>

Clinicians can encourage gradual increases through commuting, household tasks, occupational activity and brief movement breaks, then using wearable or phone-based tracking to reinforce progress. The key message: benefits begin at low step counts, and every step contributes to cardiovascular risk reduction. ■

References available with the online version of this article at [ACC.org/CARDIOLOGY](https://www.acc.org/CARDIOLOGY).

### HELPING PATIENTS MOVE MORE

CardioSmart offers easy-to-use tools to help patients understand why movement matters and how small steps can add up. Visit [CardioSmart.org/MoveMore](https://www.CardioSmart.org/MoveMore) to download these infographics and more.



This article was authored by **Colleen McCarthy, MD**, Brown University Warren Alpert Medical School; **Emma Mueller**, Yale University; and **Verity Ramirez, MD, FACC**, Brown University Warren Alpert Medical School.

## Updated Pathway Reframes HFpEF Care

The 2026 ACC Expert Consensus Decision Pathway (ECDP) for the Management of Heart Failure With Preserved Ejection Fraction (HFpEF) reflects a significant evolution in how HFpEF is understood and treated. Rather than a single cardiac condition, HFpEF is framed as a complex, multisystem syndrome driven by visceral adiposity, inflammation and metabolic dysfunction, with distinct patient phenotypes requiring individualized care.

Prompted by advances since the original 2023 ECDP, the document incorporates positive clinical trial data supporting SGLT2 inhibitors, nonsteroidal mineralocorticoid receptor antagonists (MRAs) and incretin-based therapies that extend benefits beyond HF to broader cardiovascular, kidney and metabolic health.

A central theme is accurate diagnosis. The ECDP provides a structured approach to patients with dyspnea, edema and other symptoms, including differential diagnosis, scoring systems, assessment of HFpEF mimics

and sex-specific considerations, to support earlier recognition and evidence- and guideline-based treatment.

For management, the pathway provides practical guidance on optimal medical therapy, including use and titration of SGLT2 inhibitors, MRAs, incretin-based therapies, angiotensin receptor-neprilysin inhibitors, angiotensin receptor blockers, diuretics and beta-blockers. The document highlights nonpharmacologic interventions and provides a framework to address common comorbidities in HFpEF, and emphasizes comprehensive management of frequently associated conditions.

"As science evolves, some recommendations may need to be altered to reflect those advances," write the authors, led by Chair **Michelle M. Kittleson, MD, PhD, FACC**, and Vice Chair **Gurusher S. Panjra, MBBS, FACC**. "In the interim," the ECDP offers practical tips and structure for clinical decision-making and implementation

## ACC Scientific Statement Connects Frailty, Cognition and CV Outcomes

Because older adults rarely experience CV disease in isolation, ACC's newest Scientific Statement on *Cognitive Impairment and Frailty in Older Adults With Cardiovascular Disease* stresses the importance of considering cognitive impairment, frailty and physical disability within the context of CV decision-making.

Led by Writing Committee Chair **Karen P. Alexander, MD, FACC**, the document emphasizes the way these conditions influence health outcomes, function, treatment decisions and quality of life, and underscores the need to consider them as interconnected manifestations of the biological aging process.

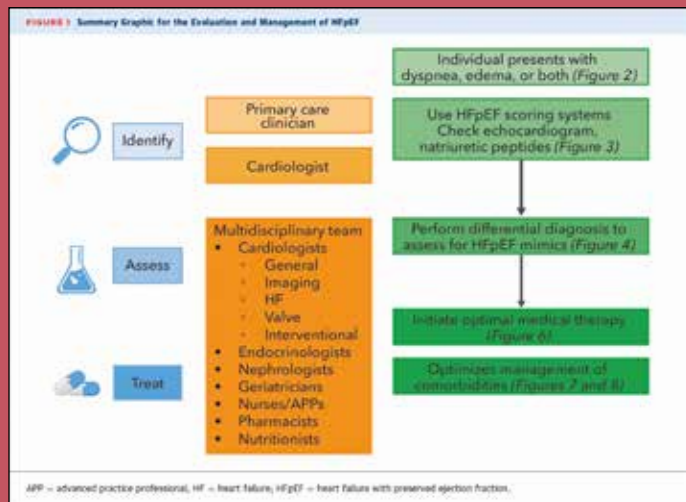
The statement highlights several major themes, including the role of biological aging and multisystem pathophysiology, such as vascular dysfunction, chronic inflammation and sarcopenia, in linking CV disease,

frailty and cognitive decline. It also provides practical, consensus-based recommendations for prevention, screening, assessment and management.

Key takeaways include addressing shared, modifiable risk factors and social drivers of health; implementing routine and feasible screening for frailty and cognitive impairment in outpatient settings and after hospitalization; ensuring timely diagnostic evaluation and referral when concerns are identified; and promoting resilience through cardiac rehabilitation, multidomain exercise, nutritional optimization, careful medication management and reduction of polypharmacy-related harms. ■

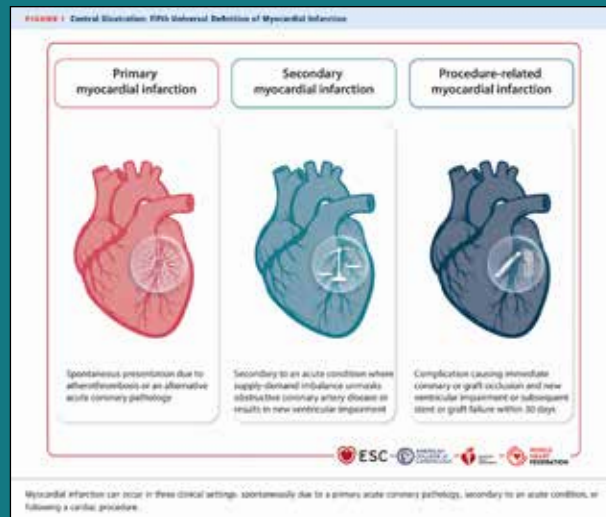
**Scan the QR code** to read the full Statement in *JACC*.





of contemporary pharmacologic and nonpharmacologic therapy. ■

Scan the QR code to read the full ECDP in JACC.



## Global CV Societies Release **Updated Universal Definition of MI**

The Fifth Universal Definition of Myocardial Infarction (MI) released on behalf of a joint task force from the ACC, European Society of Cardiology, American Heart Association and World Heart Federation provides a new clinical classification of MI that is based on pathophysiology, aligns with clinical evaluation of patients and incorporates objective diagnostic criteria.

Highlights include refined criteria for acute and chronic myocardial injury, emphasizing underlying mechanisms and sex-specific cardiac troponin thresholds to improve diagnostic accuracy, particularly in women; replacement of numerical MI classification with three clinical categories: Primary MI, Secondary MI and Procedure-related MI; new objective criteria for silent or unrecognized MI; updated definition of MINOCA as “myocardial injury with nonobstructive coronary arteries”; introduction of accelerated diagnostic pathways using high-sensitivity cardiac troponin assays; guidance for diagnosing MI in low-resource settings; and proposed ICD-11 codes to align with updated MI classification and support implementation and research. ■

Scan the QR code to read the full document in JACC.



## New Clinical Performance, Quality Measures **Set AFib Care Standards**

The 2026 ACC/AHA Clinical Performance and Quality Measures for Patients With Atrial Fibrillation (AFib) provide an updated framework to help improve the quality, consistency and equity of AFib care. Developed in collaboration with the American College of Clinical Pharmacy and the Heart Rhythm Society, the document translates the strongest Class 1 and Class 3 recommendations from the 2023 ACC/AHA AFib guideline into measurable practice standards. ■

Scan the QR code to read the full document in JACC.





**T**he ACC was live from ESC Congress 2026 in Munich, bringing members the latest cardiovascular science and clinical guidance. Below are standout studies in heart failure (HF), structural heart disease, dyslipidemia, prevention and more, plus promising news in pulmonary embolism (PE). Visit [ACC.org/ESC2026](https://www.acc.org/ESC2026) for complete coverage, including video interviews.

### Heart Failure Highlights

In patients with pulmonary hypertension associated with left heart disease and HF, **PADN-HF-PH** demonstrated that pulmonary-artery denervation added to guideline-directed medical therapy reduced clinical worsening without a major procedural safety signal.

In chronic HF, **LUMINARA** showed that the oral relaxin receptor agonist AZD5462 was well tolerated, with early signals of improved cardiac function and hemodynamics that support further outcomes testing.

**H-HeFT** and **Met-HeFT** showed no significant cardiovascular benefit from hydralazine plus isosorbide dinitrate or metformin in broader HF populations, highlighting the need to test familiar therapies in contemporary, well-treated cohorts before expanding use.

An analysis of **DAPA ACT HF-TIMI 68**, published in *JACC: Heart Failure*, found that in-hospital dapagliflozin initiation produced modest but significant improvements in congestion within one week among patients hospitalized for HF. Among 2,401 patients, dapagliflozin improved all decongestion-related endpoints vs. placebo within one week, with effects sustained at two months and diuretic efficiency increasing progressively.

A nurse-led, mobile health-supported collaborative care model in **TIME-HF** improved survival without hospitalization and reduced deaths among patients with HF and reduced ejection fraction in India. ■

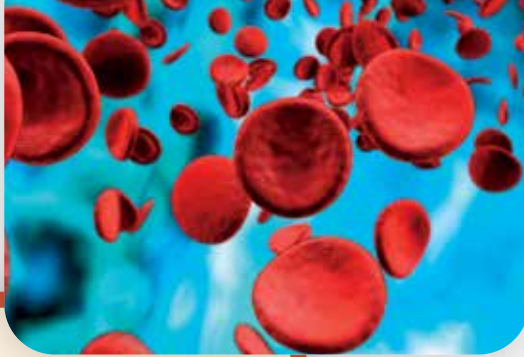
### Structural Heart Insights

Three late-breaking trials offered practical insights for structural heart disease care. In **TAVI PCI**, performing TAVI before PCI was noninferior to a PCI-first strategy in patients with severe aortic stenosis and concomitant coronary artery disease. **ACASA-TAVI** found that 12-month NOAC monotherapy after TAVI reduced hypoattenuated leaflet thickening vs. aspirin monotherapy, while remaining noninferior for bleeding, thromboembolic events or death. In **TRIC-I-HF**, transcatheter tricuspid valve repair showed potential benefits in selected patients with HF and significant tricuspid regurgitation.

### Positive News in PE

Results from **PRAGUE-26** showed that, among patients with intermediate-high-risk acute PE, catheter-directed thrombolysis with alteplase plus anticoagulation reduced the seven-day risk of death from any cause, recurrent PE, or cardiorespiratory decompensation or collapse vs. anticoagulation alone. Bleeding rates appeared similar at seven days.

"Using the blueprint already employed for heart attacks, we were able to demonstrate that specialized interventional treatment can be delivered in tertiary care centers," said **Viktor Kočka, MD**.



### Fast Takes: Lipids

**AMUNDSEN** showed initiating evolocumab before PCI in patients with acute MI markedly improved LDL-C goal achievement at one year, although no early clinical benefit was observed. In **VESALIUS-CV**, intensive LDL-C lowering with evolocumab in high-risk patients without prior CV events reduced major adverse cardiac events (MACE), supporting earlier intensification in selected primary prevention populations.

**SHASTA-3** and **SHASTA-4** addressed severe hypertriglyceridemia, with quarterly plozasiran reducing triglycerides by about 80% at one year and significantly lowering acute pancreatitis events vs. placebo.

Lepodisiran, a novel extended-duration small interfering RNA studied in a post-hoc analysis of **ALPACA**, reduced Lp(a) levels from 60 to 180 days after subcutaneous administration in patients with elevated Lp(a). The analysis also showed sustained, dose-dependent reductions in OxPL-apo(a) and OxPL-apoB through day 360, closely correlating with reductions in Lp(a).

A protocol-based implementation strategy in **BRIDGE** focused on earlier intensive treatment in patients hospitalized for an emergency PCI led to more patients achieving LDL-C levels <70 mg/dL and <55 mg/dL than standard care.

Visit **JACC.org/Guidelines** to download the new ACC/AHA Dyslipidemia guideline.

### Fast Takes: Prevention

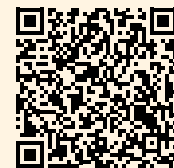
**REACT** highlighted the burden of silent atherosclerosis earlier in life. Imaging identified subclinical disease in nearly 60% of about 17,000 adults aged 45 years without known ASCVD, with plaque volume rising sharply with age and suggesting an opportunity for earlier detection and treatment.

In **STAREE**, atorvastatin reduced MACE by 30% among community-dwelling adults ≥70 years old without known CV disease, diabetes or dementia; disability-free survival was not improved.

**DAN-RSV** showed fewer RSV-related respiratory illness hospitalizations with the bivalent RSV prefusion F vaccine vs. no vaccination, supporting vaccination as part of prevention strategies for older and higher-risk adults.

### Interventional Insights

New data from **LIBREXIA ACS, PREMIUM, SWITCH SWEDEHEART, A-CLOSE** and **EPIDAURUS** shed light on milvexian with antiplatelet therapy following an acute coronary event; aspirin omission at the time of primary PCI in STEMI; switching from ticagrelor to prasugrel after PCI in ACS; clopidogrel vs. extended DAPT after high-risk PCI; and potent antiplatelet therapy in patients with atrial fibrillation after MI. **Scan the QR code** to read more details.





## Not All Trial Names Are Created Equal

Some late-breaking clinical trials make headlines for their science, and some also happen to have names that spark a little creativity. Trials like **SINGLE-AF** and **POET-II** not only advanced cardiovascular care, they inspired some fun social media moments along the way. Check out ACC and JACC Journals on Instagram, X, LinkedIn, Facebook and Bluesky to see the coverage from the meeting - and stay tuned for more creative takes on the latest science from TCT 2026 and AHA 2026 this fall.



## New ESC Guidelines Address CR, CKD and HF

Three major guideline updates were released by the ESC during its Congress related to cardiac rehabilitation (CR), chronic kidney disease (CKD) and heart failure (HF).

The first-ever ESC Guideline on **Cardiac Rehabilitation** underscores the broad benefits of CR programs, including improved quality of life, physical fitness, confidence and mental well-being, while lowering the risk of future cardiovascular events. Notably, the guideline expands the role of CR to additional groups, including those with congenital heart disease, atrial fibrillation, heart valve replacement and cancer therapy-related heart complications.

The first dedicated ESC Guideline on **Cardiovascular Disease and Chronic Kidney Disease** calls for all patients with heart disease to be assessed for kidney disease. Developed with the European Renal Association, it emphasizes wider use of kidney function and urine albumin testing to improve early detection. The document also reflects emerging evidence that relatively simple treatments can substantially reduce both kidney and cardiovascular complications and provides recommendations for adapting cardiovascular care in patients with CKD.

The updated **ESC Heart Failure Guideline** introduces important changes to the classification and treatment of HF. A staging approach was adopted that spans prevention in at-risk individuals through management of advanced disease, emphasizing earlier intervention to address a growing global burden driven by aging populations and rising obesity rates. The guideline simplifies HF phenotypes into reduced and preserved ejection fraction categories and replaces the term “acute” HF with “decompensated” HF, as well as establishes new therapy categories designed to remain relevant as treatments evolve. The update also incorporates the latest evidence on medical, device-based and interventional therapies, alongside a renewed emphasis on patient education and self-care.

**Scan the QR code** for the ACC/AHA/ESC/WHF Fifth Universal Definition of MI also released during ESC Congress 2026.



## Innovation in Cardiac Diagnosis, Device Therapy

Three Hot Line trials – **ASPIRED**, **DANISH-CRT** and **His-Alternative II** – tested 14-day ECG monitoring in patients with unexplained syncope, compared cardiac resynchronization therapy (CRT) modalities and assessed targeted left ventricular lead placement at the site of latest electrical activation in patients with heart failure and prolonged QRS.

Scan the QR code to read the details.



## Late-Breaking Critical Care Cardiology Science

In **AIR-STEMI**, complete coronary artery revascularization guided by functional vs. conventional coronary angiography reduced the risk of death, MI, cerebrovascular accident or ischemia-driven revascularization in patients with STEMI and multivessel CAD.

After MI was ruled out in patients with suspected ACS, **TARGET-CTCA** showed that routine CT coronary angiography-guided management did not reduce subsequent MI or cardiovascular death. In **PRECISE-MI**, a rapid 0/1-hour biomarker pathway for MI was as safe as the standard 0/3-hour pathway but did not shorten ED length of stay or increase direct ED discharge.

Scan the QR code to read the details.



## Women's Heart Health Takes Center Stage

Women in cardiology, as well as the cardiovascular health of women, commanded attention at ESC Congress 2026.

The momentum began immediately before the Congress at RISE @ ESC Congress, which brought women physicians together for a full day of leadership development, mentorship, career planning and community building. Centered around the theme of "Growing and Thriving as a Leader in Cardiology," the event included several ACC women leaders, including ACC President **Roxana Mehran, MD, FACC**; Past ACC President **Pamela S. Douglas, MD, MACC**; JACC: CardioOncology Editor-in-Chief **Bonnie Ky, MD, FACC**; and others.

"Talent is everywhere, but opportunity is not, especially for women," said Mehran, who underscored the connection between advancing women leaders and improving cardiovascular outcomes for women worldwide in her welcome address. "We must rise together and shift the future of health care and transform women's health."



# STROKE PREVENTION IN AFIB: DEFINING THE ROLE OF LAAO

By Debra L. Beck, MSc

**L**eft atrial appendage occlusion (LAAO) has become the most performed structural heart procedure in the U.S., with an estimated >700,000 procedures completed to date and volumes climbing sharply every year.

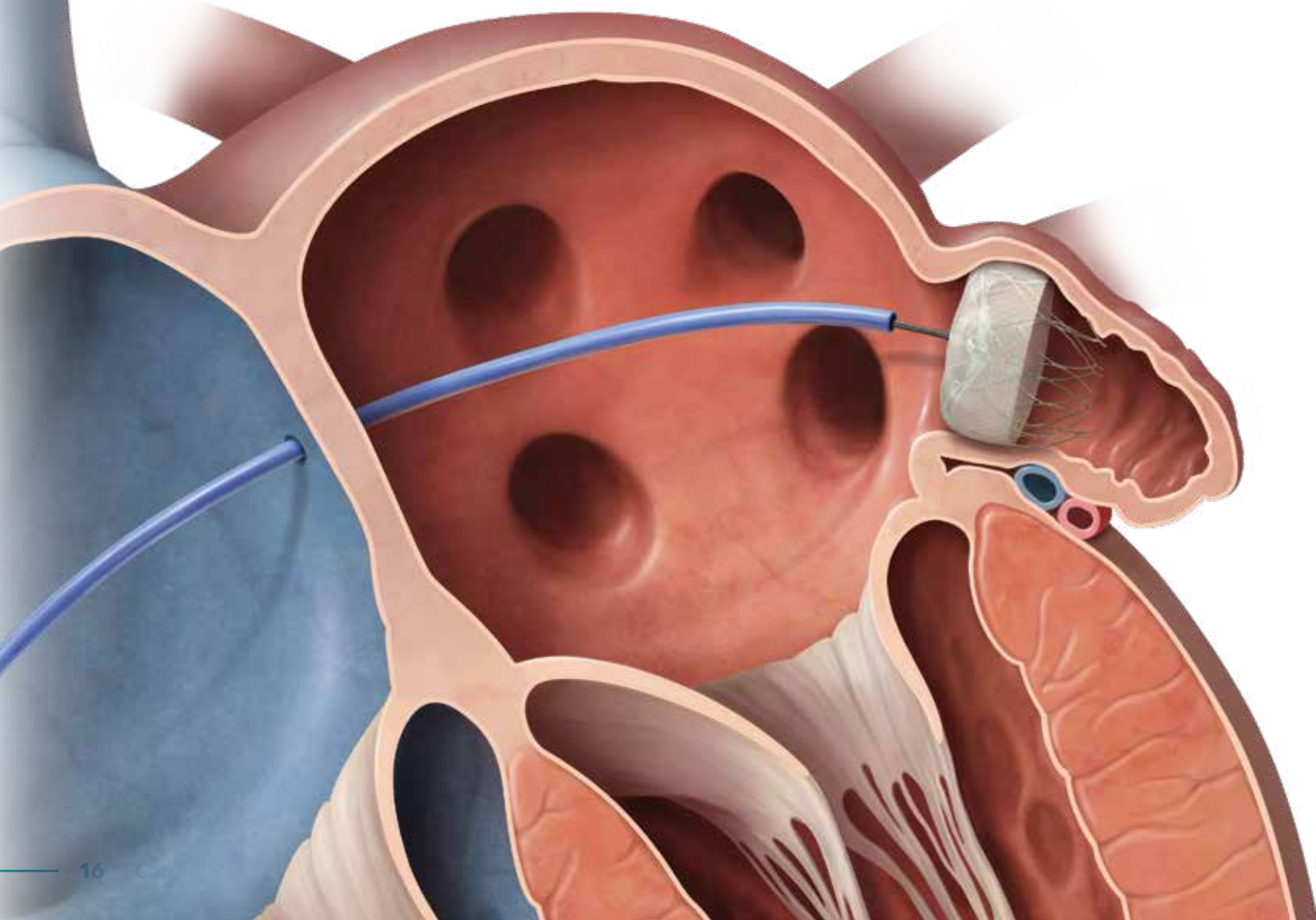
This increase is reflective of both device maturation over more than a decade and the large population of patients with atrial fibrillation (AFib) inadequately treated with anticoagulation, says **James V. Freeman, MD, FACC**, director of cardiac electrophysiology at Yale New Haven Health in CT.

Freeman has been instrumental in generating real-world data for ACC's NCDR LAAO Registry. Quite a lot of real-world data, in fact. The LAAO Registry captures

an estimated 95-98% of all LAAO procedures performed in the U.S. and has published 38 papers reporting outcomes in the last six years alone.

For most of the decade since the first LAAO device was approved in 2015, the patients undergoing LAAO have been those, as Freeman puts it, "caught between a rock and a hard place." These are people with AFib with elevated stroke risk but for whom anticoagulation has become untenable, dangerous or simply impossible to sustain.

That population is large. According to 2020 Registry data, patients who underwent LAAO with the WATCHMAN device in the first three years of commercial use had a patient profile starkly different



from the moderate-risk enrollees of early clinical trials, with a mean age of 76.6 years and a mean CHA<sub>2</sub>DS<sub>2</sub>-VASc score of 4.6.<sup>1</sup> Most patients had relative or absolute contraindications to long-term anticoagulation, including a 69% rate of prior bleeding and a 12% rate of intracranial hemorrhage (ICH). In comparison, only 13.3% of the patients enrolled in the PROTECT-AF and PREVAIL randomized clinical trials had a prior bleeding event.

The recent CHAMPION-AF trial, presented as a late-breaking clinical trial at ACC.26, has sharpened both the promise and the limits of the field.<sup>2</sup> The 3,000-patient randomized trial showed that WATCHMAN FLX was noninferior to nonvitamin K antagonist oral anticoagulants (NOACs) for the composite of cardiovascular death, stroke and systemic embolism (SE) at three years, while significantly reducing nonprocedural bleeding. Nonprocedure-related bleeding was seen in 11% of LAAO patients and 19% of NOAC patients, yielding a hazard ratio (HR) of 0.55 in favor of LAAO ( $p < 0.001$  for superiority).

Importantly, the trial enrolled patients suitable for either LAAO or long-term oral anticoagulation (OAC).

**Saibal Kar, MD, FACC**, of Los Robles Heart Center, Thousand Oaks, CA, who presented the CHAMPION-AF results, is careful about what that finding means, and for whom. "The numerically higher ischemic stroke rate with LAAO compared with medical therapy was about 1% over three years, which annually comes to 0.33%," he says. "We will see what happens at five years. If that difference remains the same, we know it's okay."

For patients with prior ICH or stroke that has broken through despite OAC, CHAMPION-AF is largely beside

The numerically higher ischemic stroke rate with LAAO compared with medical therapy was about 1% over three years, which annually comes to 0.33%. We will see what happens at five years. If that difference remains the same, we know it's okay.

Saibal Kar, MD, FACC

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the point. "For those patients," Kar says simply, "it's a no-brainer. Those patients should almost automatically be sent for LAAO."

Freeman broadly agrees. "I think the relatively wide noninferiority margins and the higher stroke finding – albeit with a lower bleeding risk – gave some people pause about the idea of doing LAAO in just about anyone with AFib. The standard indication though, thinking about this for people who've had some problems with anticoagulation, makes a lot of sense."

Not everyone found the trial's primary result sufficient. **Gregory M. Marcus, MD, FACC**, (UCSF Health, San Francisco), writing in an accompanying editorial, argued that given CHAMPION-AF's industry sponsorship, the trial "needed to show convincing noninferiority" – a bar he felt it fell short of. The data, Marcus wrote, while supporting "expanding consideration of [LAAO] closure for selected patients on a case-by-case basis," were unlikely to be sufficient "for a definitive declaration that this approach is as efficacious as conventional NOAC therapy in the great majority of patients with [AFib]."<sup>3</sup>

Those concerns land alongside a separate and more sobering trial result: CLOSURE-AF, presented at AHA 2025, failed outright to demonstrate that LAAO was noninferior to physician-directed best medical care in a similarly high-risk AFib population.<sup>4</sup>

"The CHAMPION-AF trial showed a slightly higher event rate for ischemic stroke compared with direct oral anticoagulants (DOACs), and this signal was most apparent in the over-75 age group," says **Jens Erik Nielsen-Kudsk, MD, DMSc**, in an email exchange with *Cardiology*. Nielsen-Kudsk (Aarhus University Hospital, Skejby, Denmark) presented an age subgroup analysis of the CHAMPION-AF trial at EuroPCR in May 2026.

The annualized ischemic stroke and SE rates in CHAMPION-AF in the intention-to-treat analysis were 0.8% for DOACs and 1.1% for LAAO at three years. The signal was attenuated in the per-protocol analysis and further weakened when looking only at disabling strokes (0.8% vs. 0.5%).

"Adherence to DOACs was very high throughout the study (87%) and much higher than in clinical practice. The annualized stroke/SE rate of 1.1%

is similar with the stroke/SE rates found in the large pivotal DOAC trials," says Nielsen-Kudsk. The prespecified analysis on stroke and SE at five years will provide more relevant data on stroke risk after LAAO.

For patient counseling, Nielsen-Kudsk suggests that "LAAO across age groups can be considered effective stroke prevention comparable to DOAC, but with a substantially reduced long-term bleeding risk."

### Prior ICH: When Anticoagulation Is the Enemy

Of all the circumstances that can bring an AFib patient to an LAAO discussion, prior ICH is the most compelling. The hemorrhage itself is the contraindication for resuming anticoagulation, yet doing nothing leaves the patient exposed to cardioembolic stroke. These patients are, in the most literal sense, stuck.

The NCDR LAAO Registry has helped quantify what "stuck" looks like in practice. In a recent paper published in *JACC: Clinical Electrophysiology*, patients with AFib with a history of ICH who underwent LAAO had a higher risk of recurrent ICH compared with those without prior ICH (HR, 3.15 vs. 1.39).<sup>5</sup> Over a median 380-day follow-up, overall event rates were low (1.65% in those without ICH history vs. 3.56% in those with prior ICH;  $p < 0.0001$ ) and, as the authors noted, substantially lower than CHA<sub>2</sub>DS<sub>2</sub>-VASc-predicted rates without intervention.

A 2025 meta-analysis pooling 19 observational studies and 1,671 patients with AFib and prior ICH found that during follow-up after LAAO, ischemic stroke and transient ischemic attack occurred in 2.9% of patients and ICH in 1.9%.<sup>6</sup> Against risk-score predictions, LAAO significantly reduced ischemic stroke

LAAO across age groups can be considered effective stroke prevention comparable to DOAC, but with a substantially reduced long-term bleeding risk.

Jens Erik Nielsen-Kudsk, MD, DMSc

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risk (risk ratio [RR], 0.28; 95% CI, 0.21-0.39) and bleeding events (RR, 0.61; 95% CI, 0.44-0.84), leading the authors to conclude that LAAO is an "effective and relatively safe treatment" for AFib patients with prior ICH.

Freeman underscores that this group's risk profile does not normalize after LAAO. "People who bleed tend to have a higher risk for bleeding with any of these therapies," he notes. "That's certainly true for intracranial hemorrhage. But the ischemic stroke risk reduction overall seems to be effective."

The relative risk reduction with LAAO across stroke-risk profiles has held at roughly 65-70% compared with historical untreated rates, notes Freeman, even as absolute risk climbs with higher CHA<sub>2</sub>DS<sub>2</sub>-VASc scores.

The clinical implication is clear: in AFib patients with prior ICH, LAAO is not merely reasonable – it is often the most defensible path forward.

### Breakthrough Stroke: When Anticoagulation Fails

Breakthrough stroke despite adequate anticoagulation is more common than appreciated. In patients who suffer an ischemic stroke despite OAC, the risk of recurrence remains high with continued anticoagulation (HR, 1.6),

and switching agents offers no apparent advantage.

The 2024 STR-OAC LAAO cohort study asked directly what happens to these patients when LAAO is added.<sup>7</sup> Pooling data from 21 international sites, investigators used propensity score matching to compare 433 patients who underwent LAAO after a thromboembolic event on OAC against 433 controls who continued OAC alone. Over two years, the annualized ischemic stroke rate was 2.8% per patient-year in the LAAO group vs. 8.9% in controls (HR, 0.33; 95% CI, 0.19-0.58). After the procedure, 67% of LAAO patients discontinued anticoagulation entirely, while 33% continued it as adjunctive therapy.

LAAO substantially reduces recurrent stroke in this population, but it does not eliminate the excess risk that comes with a prior breakthrough event. An analysis of the OCEAN-LAAC registry, published in *JACC: Clinical Electrophysiology* in December 2025, found that AFib patients with a history of stroke despite anticoagulation who underwent LAAO still carried a postprocedure ischemic stroke rate of 4.0%, compared with 1.6% in those without prior breakthrough stroke (HR, 2.62).<sup>8</sup>

"There's residual risk of stroke after any of these therapies," says Freeman. "That's true of DOACs, and it's true of LAAO." The goal is not erasure of risk but meaningful reduction in patients who have already demonstrated that standard therapy is insufficient.

Two ongoing randomized trials will further build the evidence base in this challenging patient subgroup. The ELAPSE trial is testing whether LAAO is superior to continuing OAC after a breakthrough stroke, a direct randomized test of the STR-OAC finding. LAAOS-4, enrolling 4,000 patients with  $\text{CHA}_2\text{DS}_2\text{-VASc} \geq 4$ , asks whether adding LAAO to ongoing anticoagulation can reduce stroke above OAC alone, building on the LAAOS-3 finding that surgical ligation of the appendage during cardiac surgery reduced ischemic stroke rates.<sup>9</sup> "The idea is basically to add the two together to get at that residual risk," Freeman says.

Until those trials report, the weight of current evidence supports considering LAAO after a breakthrough stroke in carefully selected patients, with the explicit acknowledgment that residual risk persists.

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People who bleed tend to have a higher risk for bleeding with any of these therapies, that's certainly true for intracranial hemorrhage. But the ischemic stroke risk reduction overall [with LAAO] seems to be effective.

James V. Freeman, MD, FACC

## LAAO REGISTRY



Scan the QR code to learn more about ACC's LAAO Registry and get involved.



Scan this QR code to read the latest research based on LAAO Registry data.

## Closing Arguments

Looking ahead, Kar anticipates meaningful guideline evolution from CHAMPION-AF's findings. The existing Class IIa indication – for patients who can tolerate short-term but not long-term anticoagulation – should, in his view, be elevated to Class I. At the same time, a new Class IIa or IIb indication should follow for OAC-eligible patients who, after thorough informed discussion, prefer to avoid lifelong anticoagulation.

For the patients at highest risk, including those with prior ICH and breakthrough stroke, "there is no

question that LAAO is an excellent option and the guideline updates are almost secondary." The evidence for LAAO in those groups does not depend on CHAMPION-AF. It existed before, and it has only strengthened, in his view.

Kar sees a further frontier opening from CHAMPION-AF: the concomitant procedure. AFib ablation and LAAO are already increasingly performed together in the U.S. and Kar describes the volume as "rising further." The rationale is straightforward: ablation reduces AFib burden and addresses the arrhythmia; LAAO closes the appendage and addresses the embolic source. "The best stroke reduction was in the patients who closed the appendage off and also treated the AFib," he says. In addition, LAAO should and can be performed concomitantly with other transseptal structural heart procedures such as transcatheter mitral valve repair. "I think that's where the field is going now." ■

*References available with the online version of this article at [ACC.org/Cardiology](https://www.acc.org/Cardiology).*

## SHARED DECISION-MAKING IN LAAO: WHAT THE DATA SAY - AND WHAT THEY CAN'T SAY

"Shared decision-making is foundationally important to the decision to undergo any procedure," says **James V. Freeman, MD, FACC**. "This is definitely one of those procedures in which it's really, really important to talk through the data in a very nuanced way with patients in order to really understand what their goals are for their care and in life - and then to make a decision together based on the data."

That nuance matters because the data, while increasingly robust, cannot do the work of the conversation. A patient who has had an ICH on anticoagulation may have a visceral and entirely rational fear of blood thinners that shapes how she weighs a small procedural risk against a reduction in long-term bleeding exposure. Another patient may find the idea of any invasive procedure more frightening than a daily pill. The clinician's job is to understand which patient is in the room.

The reimbursement framework for LAAO from the Centers for Medicare and Medicaid Services requires documentation of shared decision-making (SDM) with Medicare patients - reflecting the procedure's clinical complexity, as well as the stakes of getting the conversation wrong.

What should the conversation cover? Freeman identifies several domains as nonnegotiable: 1) how serious the patient's prior bleeding has been, 2) their stroke risk and 3) how the patient weighs those competing concerns. Patients with prior ICH often arrive already decided, their fear of a recurrent brain bleed overriding any hesitation about the procedure. For others, the calculus is more open.

**Saibal Kar, MD, FACC**, frames the procedural trade-off in terms patients can act on. "LAAO is one time for a lifetime," he says. "Blood thinners need to be continuous and uninterrupted to have their true benefits." Interruptions - whether for surgery, after a fall, in anticipation of an upcoming ski trip or because of cost concerns - represent moments of stroke exposure that a procedure can eliminate.

Conversely, the procedure itself carries upfront risk (roughly 1% total complications in CHAMPION-AF) and, for those at highest risk, a small but real residual risk of ischemic stroke that patients should understand going in.

Current guidelines require LAAO candidates to be able to tolerate at least short-term anticoagulation for postprocedural management. Beyond that floor, the ideal candidate is a patient who understands what LAAO can and cannot do, and who has had a real conversation about both with their care providers.

Kar offers a framework that cuts through the complexity for clinical practice. "I make it very simple," he says. "Who should have a WATCHMAN? Three categories: those who *should not* take blood thinners, those who *cannot* take anticoagulation, for example, because they're on cancer therapy, and those who *will not* take long-term blood thinners."

The first two categories - should not and cannot - define the core population that has driven LAAO adoption over the past decade, and they include patients with prior ICH and breakthrough stroke. The "will not" category, newly supported by CHAMPION-AF, is where shared decision-making becomes the primary clinical tool. ■

### Clinicians should discuss the following with every patient before recommending LAAO:

- Severity and type of prior bleeding (ICH, GI, other)
- Bleeding risk on continued anticoagulation (HAS-BLED score, comorbidities)
- Stroke risk profile (CHA<sub>2</sub>DS<sub>2</sub>-VASc score, prior stroke or TIA history)
- History of anticoagulation nonadherence or discontinuation
- Patient preference regarding long-term medication vs. one-time procedure
- Postprocedural antithrombotic regimen and its implications
- Residual stroke risk after LAAO (not zero, but substantially reduced)
- Procedural risk profile at the performing center

### Guide Shared Decisions With Patients

Visit **CardioSmart.org/DecisionAids** to download this decision aid and support informed, patient-centered conversations with patients with AFib who are at very high risk of stroke.

**A DECISION AID FOR AFIB STROKE PREVENTION FOR PATIENTS WITH ATRIAL FIBRILLATION**

**CLOSURE DEVICE**

During a procedure, the closure device is placed in the left atrial appendage, the part of the heart where the majority of blood clots form in patients with AFib. The device is designed to prevent blood clots from moving to the rest of the body. The closure device does not stop strokes that come from other parts of the heart.

Each person's risk for stroke is different. Patients can be at low, moderate or high risk for stroke. This booklet is for patients who are at high risk, which means you likely want to consider some options available to help prevent stroke.

Perhaps you have a new diagnosis of AFib and are learning about the different options available. For most people, the most likely medication commonly referred to as "blood thinners." Or you may have been on warfarin for years and are now considering alternatives, such as a newer blood thinner or a procedure to place a device in the heart. This booklet will help you understand your options and make a decision about whether to have the procedure.

**Important heartbeats from AFib can cause blood to collect in the heart and form a blood clot. This clot can travel to the brain and cause a stroke, leading to a stroke.**

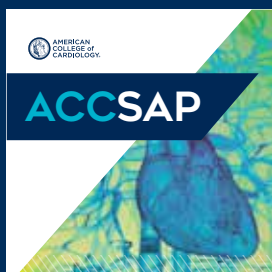
**Stroke prevention:** The most likely medication commonly referred to as "blood thinners." Or you may have been on warfarin for years and are now considering alternatives, such as a newer blood thinner or a procedure to place a device in the heart. This booklet will help you understand your options and make a decision about whether to have the procedure.

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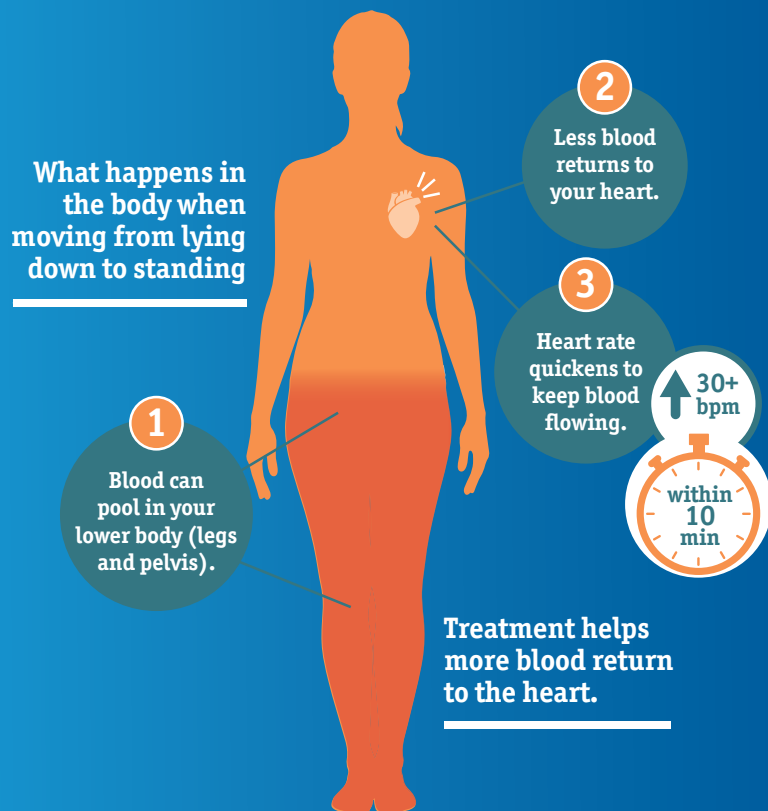
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## POTS: Recognition Is Rising, But Management Gaps Remain

For many patients with postural orthostatic tachycardia syndrome (POTS), a form of dysautonomia, simply standing can trigger palpitations, dizziness, fatigue and exercise intolerance. Affecting an estimated 500,000 to 1 million Americans and disproportionately affecting adolescent girls and women of reproductive age, POTS is characterized by a sustained increase in heart rate (HR) upon standing without orthostatic hypotension (OH). Symptoms often worsen when upright, improve with recumbency and persist for at least three months.

Patients may experience palpitations, dizziness, fatigue, exercise intolerance, cognitive difficulties, gastrointestinal symptoms, migraines and chronic pain. POTS may also

coexist with other conditions, including joint hypermobility and hypermobile Ehlers-Danlos syndrome, migraine, autoimmune disorders, mast cell activation disorders and post-viral syndromes including Long COVID.

This complex and often multisystem presentation can contribute to symptoms being misattributed to anxiety, deconditioning or “just tachycardia.” This can delay appropriate diagnosis as well as treatment.

Findings from a new CardioSurve survey of ACC members suggest that while cardiologists increasingly recognize POTS and understand its clinical features, persistent gaps in management, access to specialty resources and demand for clinician education offer opportunities to improve care.

### A Syndrome That Extends Beyond Tachycardia

POTS is best viewed as a clinical phenotype rather than a single disease. Several overlapping mechanisms can produce the shared endpoint of orthostatic tachycardia and symptoms.

Hypovolemia is common, affecting up to 70% of patients, while deconditioning, low stroke volume and smaller cardiac size may further amplify the heart rate response. Other subtypes that have been proposed include neuropathic POTS, characterized by impaired lower-extremity vasoconstriction and venous pooling, and hyperadrenergic POTS, marked by elevated upright norepinephrine.

Diagnostic criteria generally include chronic symptoms that worsen in the upright position and improve when sitting or lying down, accompanied by a sustained HR increase of at least 30 beats per minute within 10 minutes of standing in adults, or 40 beats per minute in adolescents, as well as an absence of other explanations for tachycardia like hyperthyroidism.

“The majority of patients I see with POTS are younger women, often presenting with a constellation of symptoms that extends well beyond tachycardia,” says **Rachel Bond, MD, FACC**. “They may report palpitations, lightheadedness, presyncope, exercise intolerance, profound fatigue, ‘brain fog,’ gastrointestinal symptoms and temperature intolerance.”

Post-viral, autoimmune and mast cell-related mechanisms may also play a role. “The COVID pandemic particularly shined a light on POTS and dysautonomia because of the number of patients who developed persistent autonomic symptoms following SARS-CoV-2 infection,” Bond notes. “However, post-viral POTS certainly predates COVID.”

## Increasing Awareness Among Cardiologists

The CardioSurve findings suggest that awareness of POTS has gained considerable traction among cardiovascular clinicians. Nearly three-quarters of surveyed cardiologists (71%) described themselves as very familiar with POTS, while 69% reported strong confidence in diagnosing the condition.

Among cardiologists who diagnose POTS, 75% reported relying primarily on patient history to confirm the diagnosis, followed by active stand testing (56%) and tilt-table testing (54%).

Cardiologists also appear to recognize the syndrome's clinical impact. More than eight in 10 respondents (84%) agreed that POTS has a considerable effect on patients' daily functioning, and nearly three-quarters (74%) agreed that the condition is frequently misdiagnosed or underdiagnosed.

## The Ongoing Challenge of Diagnosis

Despite growing familiarity, the survey highlights significant obstacles that continue to complicate diagnosis and contribute to inconsistent care.

## QUICK TAKES

- POTS is defined by orthostatic tachycardia with chronic orthostatic symptoms, not tachycardia alone.
- It primarily affects adolescent girls and young women, often disrupting education, training, work and quality of life.
- POTS is heterogeneous, with proposed mechanisms including deconditioning, hypovolemia, neuropathic venous pooling and hyperadrenergic states; associated conditions may coexist such as mast cell activation and post-viral/autoimmune processes.
- Cardiologists are key to excluding arrhythmias and structural heart disease while recognizing and validating symptom burden.
- Patient education, fluid and sodium optimization, compression garments and graded exercise are first-line therapies; medications should be individualized adjuncts. Visit [CardioSmart.org/POTS](https://www.cardiosmart.org/POTS) to download and/or share this infographic with patients.



"Many patients have been symptomatic for months or even years before reaching a diagnosis," Bond says. "One of the greatest challenges is that patients can look completely well while sitting in an examination room. Their ECG, echocardiogram and routine laboratory studies may all be normal, yet remaining upright for an extended period can be profoundly symptomatic."

Almost all respondents identified at least one diagnostic challenge, with

nonspecific symptom presentation (64%), limited availability of physicians with expertise in POTS (58%), symptoms being attributed to anxiety or deconditioning (57%) and limited access to autonomic testing (47%) among the most cited barriers.

"One major pitfall is attributing symptoms solely to anxiety," says Bond. "POTS can certainly coexist with anxiety, but physiologic orthostatic tachycardia should not automatically be interpreted as a psychiatric manifestation. This is particularly important for younger women, whose symptoms may be dismissed or normalized for prolonged periods."

At the same time, clinicians should consider and exclude other conditions such as anemia, thyroid disease, dehydration, medication effects, arrhythmias, inappropriate sinus tachycardia and structural heart disease.

A careful assessment with an active stand test to evaluate HR changes and rule out OH can help cardiologists identify POTS sooner, exclude mimics and guide treatment.

"POTS should ultimately be a clinical diagnosis supported by objective hemodynamic findings, not a diagnosis made from heart rate alone," Bond says.

## FOUR CLINICAL CLUES THAT SHOULD RAISE SUSPICION FOR POTS

Clinicians should consider POTS when patients have:

1. An increase in HR  $\geq 30$  bpm in adults, or  $\geq 40$  bpm in adolescents, within 10 minutes of active standing or upright tilt from a supine position, sustained for  $>30$  seconds.
2. Absence of OH, defined as a BP decrease  $>20/10$  mm Hg.
3. Presence of chronic orthostatic symptoms lasting at least three months, including lightheadedness, blurred vision, exercise intolerance and fatigue, palpitations accompanied by lightheadedness or presyncope, cognitive dysfunction, or "brain fog."
4. Symptom triggers such as heat, dehydration, illness, prolonged standing or menstruation.

"One of the most important clues is the relationship between symptoms and posture," Bond says. "When symptoms consistently worsen when upright and improve when sitting or lying down, POTS should be part of the differential."

## Recognition Does Not Always Translate Into Action

Perhaps the most notable finding from the survey is the disconnect between diagnostic confidence and treatment confidence. While 54% of survey respondents said they felt very confident managing patients after diagnosis, only one in five indicated a preference for managing patients themselves and more than half said they would prefer to refer patients to a specialist.

The survey also suggests less certainty about long-term treatment

largely agreed on core management principles involving dietary and lifestyle modifications (86%) and structured exercise regimens (70%) and stressed the importance of education.

"Education is one of the most important first interventions," says Bond. "For most patients, the foundation is adequate hydration and increased sodium intake when there is no contraindication."

She also emphasizes the importance of trigger recognition, including heat, dehydration, prolonged standing, alcohol and abrupt postural changes.

Exercise remains a cornerstone of management. Structured programs commonly begin with recumbent exercise modalities such as cycling, rowing or swimming before advancing toward upright activity. Progressive strength training, particularly targeting core and lower-extremity muscles, can help improve orthostatic tolerance and functional capacity.

For patients who remain symptomatic despite nonpharmacologic measures, clinicians may consider therapies such as beta-blockers, ivabradine, midodrine, fludrocortisone or pyridostigmine (none are FDA-approved for POTS). However, Bond emphasizes that treatment should be guided by the patient's underlying physiology and symptom profile rather than relying on a uniform approach.

"The goal is not merely to lower the heart rate," she says. "It is to improve orthostatic tolerance, restore function and give patients the tools to achieve a better quality of life."

As awareness of POTS continues to grow, the CardioSurve findings suggest that many cardiologists understand the condition's defining features and clinical significance. The next challenge may be ensuring

clinicians have the resources, referral pathways and educational support needed to confidently guide patients from diagnosis to long-term management. ■

## SURVEY DETAILS

To assess cardiologists' perceptions of POTS diagnosis and management, a survey was sent to 523 U.S.-based ACC CardioSurve panelists. From May 8 to June 11, 2026, 155 panelists completed the survey, for a 30% response rate; 148 met the inclusion criterion of currently treating patients.

strategies, particularly as clinicians navigate a heterogeneous condition with diverse physiologic drivers and no FDA-approved therapies specifically indicated for POTS.

The survey also points to a strong appetite for additional clinical guidance. Only one-third of respondents said current ACC/AHA guidelines provide sufficient direction for management. Consequently, 78% identified formal guidelines as the educational resource they would most like to see.

## Management Starts With Fundamentals

Although treatment plans must be individualized and high-quality clinical data are limited, cardiologists

## PROPER TECHNIQUE FOR ACTIVE STAND AND TILT-TABLE TESTING



### Active stand test:

- **Rest:** Supine  $\geq 5$  min.
- **Baseline:** Record HR and BP.
- **Stand:** Ask the patient to stand once and remain still for 10 min.
- **Avoid:** Walking, leaning, talking, leg tensing.
- **Record:** HR, BP and symptoms every min or at 1, 3, 5 and 10 min.
- **Stop:** Syncope/unsafe symptoms.

### Tilt-table test:

- **Setting:** Monitored, with continuous ECG and BP assessment.
- **Baseline:** Record supine HR and BP; secure the patient.
- **Tilt:** 60-70° head-up  $\geq 10$  min.
- **Monitor:** Keep the patient still and document symptoms throughout.
- **Recover:** Supine for presyncope/syncope.



### How to interpret:

- **Adults:** HR increase  $\geq 30$  bpm within 10 min plus orthostatic symptoms; no OH.
- **Adolescents (age  $\leq 19$ ):** HR increase  $\geq 40$  bpm within 10 min plus orthostatic symptoms; no OH.
- **OH:** BP decrease  $\geq 20$  mm Hg systolic or  $\geq 10$  mm Hg diastolic within 3 min.

## When Care Breaks Down: A Case Study

**M**alpractice claims often involve multiple failures. In the following case study, failure to follow evidence-based guidelines and lapses in communication and documentation led to permanent and debilitating patient injury.

### The Patient

The patient, with type 2 diabetes, hyperlipidemia, hypertensive heart disease and obesity, presented with a middle cerebral artery cerebrovascular accident (CVA). Three years earlier, the patient developed atrial fibrillation (AFib) and was treated with metoprolol and aspirin. The next year, a new cardiologist initiated an oral anticoagulant (OAC) and inserted an implantable loop recorder (ILR); a third physician later performed an AFib ablation.

After recurrent AFib developed within a month, the cardiologist started amiodarone and the patient had repeat ablation. One year later, the patient was off OAC and amiodarone with no ILR alerts, but the rationale for that strategy was not documented.

The patient subsequently returned with recurrent AFib, converted to sinus rhythm after intravenous amiodarone and was discharged without OAC. Several days later, the patient presented to the ED with a CVA.

### Case Discussion

The plaintiff alleged the cardiologist was negligent by discontinuing anticoagulation in a patient with AFib, resulting in a stroke and permanent neurological injuries. Defense experts did not support the cardiologist's care. The cardiologist stated in an interview with legal counsel the patient was informed of the stroke risks when stopping anticoagulants, but this was not documented. The case settled on behalf of the cardiologist for a high dollar amount.

### Risk Management Strategies

- **Follow guideline recommendations.** Recent studies such as OCEAN AF<sup>1</sup> and ALONE AF<sup>2</sup> suggest

anticoagulation discontinuation and using aspirin may be feasible after a successful ablation in selected patients. However, the ACC/AHA/HRS guideline recommends anticoagulation regardless of AFib burden or prior therapy.<sup>3</sup> A higher risk for stroke is likely clustered around AFib episodes. In a claims database study of nearly 500,000 patients with AFib episodes >5.5 hours, stroke risk was fivefold higher in the first five days after return to sinus rhythm in patients not on anticoagulation.<sup>4</sup>

Recurrent AFib converted to sinus rhythm in this case, followed by discharge without anticoagulation and then catastrophic embolic stroke.

- **Document patient care.** Discontinuation of anticoagulation is associated with increased mortality and risk of stroke, pulmonary embolus and myocardial infarction. However, it is common in real-world settings, ranging from 20-40%, with nonadherence rates as high as 16%.<sup>5-8</sup> If, through shared decision-making, a choice is made that deviates from usual accepted practice, it is important to document this deviation and any other clinically relevant discussion and ensure key clinical points are accurately captured. The patient should be fully informed about potential risks. In this case, although the cardiologist stated this discussion occurred, absence of documentation was critical in the outcome.
- **Improve communication among treating practitioners.** The patient received care from several cardiologists; however, there was no documentation of discussion among them about the long-term strategy for arrhythmia management. In a cardiology closed claims study,<sup>9</sup> poor communication among practitioners (12%) and with patients/caregivers (16%) were common contributing nonclinical factors, and practitioner communication was the factor most often linked to indemnity (29%). ■

References and timeline figure available with the online version of this article at [ACC.org/Cardiology](http://ACC.org/Cardiology).

This article was authored by **Fred Kusumoto, MD, FACC**, chair of the Heart Rhythm Division, Department of Cardiovascular Diseases; and associate dean of Faculty Affairs at the Mayo Clinic Alix School of Medicine in Jacksonville, FL. He also serves as ACC's Clinical Content Editor-in-Chief.

*The guidelines suggested here are not rules, do not constitute legal advice, and do not ensure a successful outcome. The ultimate decision regarding the appropriateness of any treatment must be made by each health care provider considering the circumstances of the individual situation and in accordance with the laws of the jurisdiction in which the care is rendered.*

## EP and NCDR: A Decade of Real-World Evidence Generation

The electrophysiology (EP) field has undergone a remarkable transformation over the past decade. Advances in left atrial appendage occlusion (LAAO), atrial fibrillation (AFib) ablation and outpatient procedural care have expanded treatment options for patients while improving safety and outcomes.

At the same time, the rapid pace of innovation has heightened the need for robust real-world evidence. NCDR registries have helped meet that need, providing clinicians, researchers and health systems with a comprehensive view of how new technologies and treatment strategies perform outside the controlled environment of clinical trials.

From tracking the growth of LAAO and AFib ablation to supporting quality improvement efforts in ambulatory surgical centers (ASCs), NCDR programs have played a central role in advancing high-quality care for patients with AFib. And as AFib diagnoses continue to rise in the U.S., the need to assess procedural safety, effectiveness and long-term outcomes has never been greater.

### 10 Years of Real-World Data

ACC's LAAO Registry launched shortly after the U.S. Food and Drug Administration approved the WATCHMAN device in 2015, providing a framework to assess real-world outcomes as the procedure entered widespread clinical practice.

Since then, procedural volume and participating hospitals have increased

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The LAAO Registry has helped build confidence in the LAAO procedure by demonstrating excellent outcomes in unfiltered, real-world data.

Andrew Michael Goldsweig, MD, MS, FACC

substantially, with analyses involving well over 100,000 patients helping transform LAAO from a therapy supported primarily by pivotal clinical trials into one backed by extensive real-world evidence.

These data have documented consistently high procedural success rates while helping clinicians better understand patient selection, long-term outcomes and opportunities for quality improvement.

“The field of LAAO was destined to grow rapidly... the population eligible to benefit from this technology is enormous,” says **Andrew Michael Goldsweig, MD, MS, FACC**, chair of the LAAO Registry Steering Subcommittee. “The LAAO Registry has helped build confidence in the LAAO procedure by demonstrating excellent outcomes in unfiltered, real-world data.”

The technology behind the procedure has also continued to evolve. Next-generation devices, including WATCHMAN FLX and Amulet, have expanded treatment options and further advanced procedural safety and effectiveness. In turn, the registry has evolved to capture emerging technologies, new clinical data elements and changing practice patterns, including concomitant procedures such as AFib ablation.

As LAAO enters its second decade of widespread adoption, new evidence continues to refine how the procedure is used and which patients may benefit most.

Goldsweig points to several key questions that will shape the future of the field, including whether LAAO could serve as a first-line strategy for stroke risk reduction in patients with AFib, regardless of contraindications to anticoagulation.

Results from the CHAMPION-AF trial, presented at ACC.26, found LAAO superior to long-term non-vitamin K antagonist oral anticoagulant therapy for prespecified nonprocedure-related bleeding in patients with AFib who were candidates for anticoagulation.

At the same time, unanswered questions remain around appropriate management of peri-device leak and device-related thrombus to minimize stroke risk.

“The ACC and NCDR have played a key leadership role in partnership with clinicians, hospitals, regulators and industry,” notes Goldsweig. “As the LAAO procedure becomes available to an

The AFib Ablation Registry is well positioned to facilitate understanding at a time when there are so many emerging technologies.

Emily Zeitler, MD, FACC

”

ever-increasing number of patients, the registry allows quality benchmarking and improvement at the level of the individual operator, the hospital and the field as a whole.”

### Advancing AFib Ablation

AFib ablation has undergone a similar evolution. Once reserved for patients who failed to respond to or could not tolerate antiarrhythmic drugs, the 2023 AFib Guideline elevated catheter ablation to first-line therapy in select patients with symptomatic paroxysmal or persistent AFib.

“Many in the EP space were already approaching AFib care with earlier ablation, so the guidelines, which collated an ever-expanding body of literature supporting this approach, were validating, but it remains incompletely clear which patients are best served by earlier ablation,” says **Emily Zeitler, MD, FACC**, chair of the EP Registry Suite Steering Subcommittee.

Developed in tandem with the LAAO Registry, ACC’s AFib Ablation Registry was designed to better understand the prevalence, management and outcomes of patients undergoing ablation procedures in routine clinical

practice. The resulting data have informed guideline development, quality initiatives and ongoing research efforts.

Today, the registry continues to address important unanswered questions, investigating long-term outcomes beyond the procedural episode of care and providing valuable insight into national practice patterns across the EP service line.

Emerging innovations are creating new opportunities for evidence generation. Pulsed field ablation has rapidly reshaped the field, and the registry is working to evaluate its adoption as well as monitor safety and effectiveness as the uptake of the technology grows.

Continued on the next page

## ACC HeartCARE Centers: 100 and Counting

One hundred hospitals nationwide have officially achieved the ACC HeartCARE Center designation, showcasing their commitment to delivering high-quality, patient-centered cardiovascular care. Established in 2018, the designation is ACC’s highest recognition honoring organizations that demonstrate ongoing excellence through comprehensive accreditation, data-driven performance measurement and continuous quality improvement initiatives.

“Each of these institutions has demonstrated

a deep commitment to evidence-based care ... ensuring that patients receive the highest level of cardiovascular care, no matter where they live,” says ACC Accreditation Oversight Committee Chair **Steven B. Deitelzweig, MD, MMM, FACC**.

View the latest HeartCARE Centers, along with other recent accreditations, on the *Find Your Heart A Home* website. **Scan the QR code** to get started. ■



“Premarket and early commercial studies are generally smaller and single-arm or compared to a control arm that may or may not be relevant by the time it is widely used. That’s where the registry can be helpful,” says Zeitler. “The AFib Ablation Registry is well positioned to facilitate understanding at a time when there are so many emerging technologies.”

### Safety in the Outpatient Setting

As cardiovascular care expands beyond the traditional hospital setting, ensuring patient safety remains paramount.

The emergence of outpatient facilities for cardiovascular procedures has created new opportunities to improve access, convenience and efficiency. It has also underscored the importance of collecting consistent, high-quality data to monitor outcomes and support evidence-based care delivery.

To that end, ACC’s CV ASC Registry Suite continues to expand its ability to capture outpatient cardiovascular procedures. In early 2027, a new module will launch to collect data on AFib ablation procedures performed in ambulatory and outpatient surgical centers.

“Using more detailed information from the registry should help us develop and evolve best practices for this new setting with regard to patient selection and protocols for perioperative surveillance, sedation, transfers and other features,” says Zeitler.

The addition builds on broader efforts to support quality and safety in the outpatient setting, including the initial launch of the CV ASC Registry Suite in 2024, focused on PCI and EP device procedures, and the expansion of ACC’s Cardiac Cath Lab Accreditation to freestanding outpatient facilities.

By extending data collection and quality improvement tools into new care settings, the ACC is helping ensure that innovation and expanded access are accompanied by the same commitment to measurement, transparency

and continuous improvement that have long defined cardiovascular quality programs.

### Innovation Meets Evidence

Across LAAO, AFib ablation and emerging outpatient care models, one theme remains constant: innovation is only as valuable as the evidence supporting it.

For the past decade, NCDR registries have helped clinicians move beyond individual experiences and isolated clinical trials, providing a real-world view of patient outcomes at an unprecedented scale.

As technologies evolve, care settings shift and treatment options expand, these data will continue to play a critical role in guiding clinical decision-making, informing best practices and ensuring patients receive the highest quality care. ■

For the past decade, NCDR registries have helped clinicians move beyond individual experiences and isolated clinical trials, providing a real-world view of patient outcomes at an unprecedented scale.



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### Advanced Insights Driving Strategic Decisions

The Population Analytics Dashboard is available for ACC’s LAAO Registry and AFib Ablation Registry, offering flexible, dynamic date range selection beyond quarterly windows and population-based metric outcomes based on patient characteristics and risk profiles. **Scan the QR code** to learn more about NCDR performance dashboards.



## MedAxiom at 25: A Quarter Century Helping Cardiovascular Organizations Thrive

**T**wenty-five years ago, cardiovascular leaders faced a very different landscape.

Independent cardiology practices were flourishing, fee-for-service reimbursement dominated, and consolidation, digital transformation and payment reform had yet to reshape the specialty. Since its founding in 2001, MedAxiom has helped cardiovascular organizations thrive by combining operational expertise with a commitment to exceptional patient care.

Today, MedAxiom serves nearly 600 cardiovascular organizations nationwide, including physician, administrative and health system leaders, and works with industry partners to address challenges, ranging from workforce shortages and physician compensation to artificial intelligence (AI) and care transformation.

### ACC and MedAxiom

For the ACC, MedAxiom's 25th anniversary celebrates a partnership that has expanded the College's ability to support cardiovascular professionals beyond clinical science.

Since 2019, when the ACC acquired MedAxiom, the organizations share a mission: To transform cardiovascular care and improve heart health for all. While ACC continues to define and disseminate best practices, MedAxiom helps cardiovascular leaders translate those advances into sustainable models of care that improve access, quality and performance.

### Beyond Clinical Science

Initiatives like MedAxiom's *Cardiovascular Provider Compensation and Production Survey*, MedAxiom's analytics platform and CV Transforum are key to this work, providing data, education and peer collaboration. Newer initiatives – including HeartX, MedAtlas CV, Peer Review Plus and AccuCode CV – reflect the organization's investment in innovation and care transformation.

Other activities, such as the MedAxiom Academy, the *Cardiovascular Essentials for Advanced Practice Providers* (APPs) course, and the Cardiovascular Business and Management Essentials program,

an exclusive partnership between MedAxiom and Wharton Online, are helping professionals gain core competencies and providing access to essential operations, economics and leadership tools.

MedAxiom's collaborative community also remains central to its work. In that spirit, ACC and MedAxiom launched the Care Transformation Initiative in 2025, combining ACC's leadership in clinical excellence with MedAxiom's operational expertise to help health systems redesign cardiovascular care delivery. The initiative reflects a broader view of success, measured by outcomes, access, quality, clinician support and value.

As MedAxiom celebrates its 25th anniversary, the milestone underscores how much cardiovascular care has evolved – and how much opportunity lies ahead. Together, the ACC and MedAxiom are helping cardiovascular professionals bridge the gap between knowing what exceptional care looks like and delivering it consistently. ■

In particular, don't miss highlights from this month's Fall CV Transforum in Denver, CO, and learn more about the newest Cardiovascular Business and Management Essentials cohort, which is focused on applying real-world lessons to organizational challenges like AI integration and ROI-driven action plans.

**Scan the QR code** to learn more about MedAxiom and its work to transform cardiovascular care and improve heart health for all.



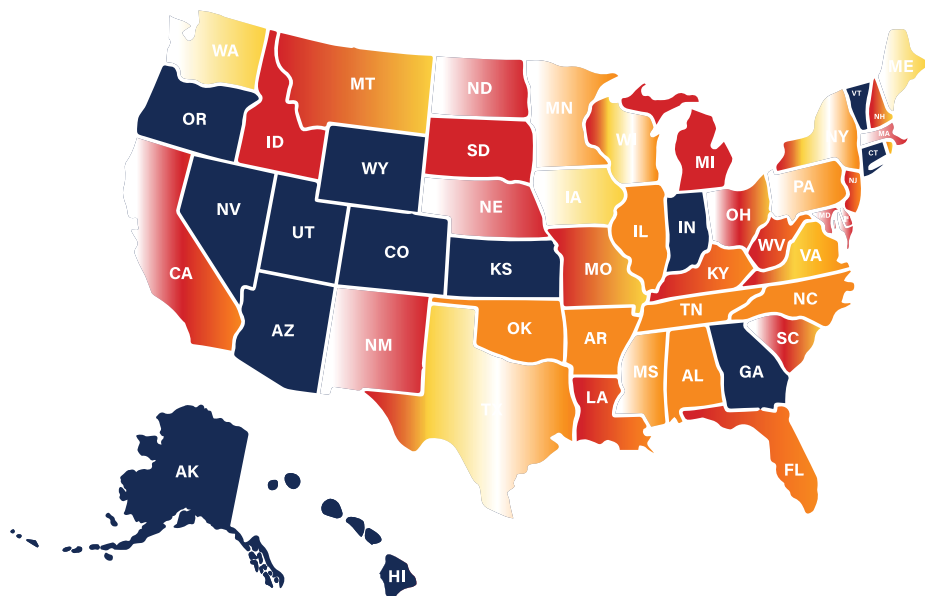
## Charting Advocacy Progress Across the States

**A**dvocacy doesn't stop in the nation's capital. ACC Advocacy works across the country alongside state chapters and engaged members to address legislative and regulatory issues that affect cardiovascular care. By building relationships with lawmakers, mobilizing grassroots action and elevating the voices of cardiovascular professionals, ACC Advocacy helps shape policies that support cardiovascular clinicians and the patients they serve.

So far this year, Chapters have attended or hosted 16 state legislative events, with seven hosting their first-ever event; met with more than 140 state lawmakers either in-person or virtually; and sent 1,000 grassroots letters or testimony to state legislators. Explore trending health policy issues in the states and highlights spurring progress across the country. ■

### Trending Issues 2026

*This map shows which ACC priority issue(s) Chapters have worked to advance at the state level.*



### Meeting Highlights: State-by-State

**Alaska:** ACC's Alaska Chapter helped secure passage of a new law requiring CPR education in public schools. Through testimony delivered by **Linda A. Ireland, DO, MBA, FACC**, action alerts and practice visits with lawmakers, Chapter members were able to advance the bill to the governor's desk.

**Illinois:** ACC's Illinois Chapter is leading efforts to expand coverage for coronary artery calcium scoring based on ACC guidelines. **Therese Guida, RN**, and fellow advocates testified before lawmakers and highlighted the importance of early heart disease detection. The Chapter will continue advancing this and other key priorities during the 2027-2028 legislative session.



**Iowa:** ACC's Iowa Chapter has worked tirelessly to advance a cardiac emergency response plan (CERP) study bill in the state's legislature. Chapter Executive **Lezlie Mestdagh** testified multiple times in favor of the bill. With the help of the Iowa CERP coalition, the bill was able to make substantial progress during this year's legislative session.



**Maryland:** ACC's Maryland Chapter joined forces with AHA for its annual legislative reception in Annapolis, advocating for Medicaid funding and healthy school lunches. The Chapter also supported legislation to ban insurer downcoding, expand Medicaid tobacco cessation coverage and more. **Ankit B. Shah, MD, MPH, FACC**, testified in support of an evidence-based screening bill for student athletes, helping elevate the College's voice on cardiovascular policy and patient care across the state.

**New York:** ACC's New York Chapter held its inaugural lobby day in Albany, where **Aaron Kithcart, MD, PhD, FACC**, secured legislative sponsors for a bill to expand peripheral artery disease testing coverage for at-risk patients. The Chapter also helped advance AED funding and prior authorization reform through the state budget process. In addition, **Anne B. Curtis, MD, FACC**, testified before the New York City Council in support of restaurant warning labels for high-sodium and high-sugar menu items. The Chapter will continue pursuing key priorities, like banning noncompetes, in the year ahead.



**Pennsylvania:** ACC's Pennsylvania Chapter spearheaded the passage of S.B. 375, or Greg Moyer's Law, through collaboration with partners including AHA and Project ADAM. The new law strengthens cardiac emergency preparedness in schools by requiring AED access at athletic events and school buildings, CPR-trained staff, CERP and regular drills.



**Rhode Island:** ACC's Rhode Island Chapter led efforts to expand coverage of self-measured blood pressure (SMBP) cuffs for eligible pregnant and postpartum women. Advocates like **Kayle Shapero, MD, PhD, FACC**, and **Jamil Halaby III, MSN, AGPCNP-C, AACC**, testified before legislative committees, published an op-ed in the *Rhode Island Current* and

engaged lawmakers directly to build support for the bill. The Chapter also partnered with AHA to host a lobby day highlighting the importance of SMBP coverage. While the bill was not included in this year's budget, the Chapter will continue advocating for its passage next session.



**Vermont:** ACC's Northern New England-Vermont Chapter strengthened its advocacy presence this year by hosting its first-ever lobby day. Led by **Tracy Hagerty, MD, FACC**, and **Rony Lahoud, MD, MPH, FACC**, the Chapter advocated for funding for CERP and AEDs in schools. Coupled with strong grassroots outreach, these efforts helped secure full funding for sudden cardiac arrest preparedness in the state's budget.

**Virginia:** ACC's Virginia Chapter was highly active during the 2026 legislative session. **Robert C. Bernstein, MD, FACC**, led successful efforts to ban noncompetes for health care professionals, working with the Medical Society of Virginia and other specialty societies. The Chapter also helped amend proposed medical malpractice legislation and advocated for policies addressing insurer downcoding, prior authorization practices and cardiovascular care for pregnant and postpartum women.

The 2027-2028 legislative sessions are right around the corner, and many states are looking to prioritize health policy issues in the year ahead. Looking for ways to engage with your state chapter and increase your participation at the state level?

Visit [ACC.org/Advocacy](https://www.acc.org/Advocacy) to get involved!

## Transforming Cardiovascular Care Together

We are living through an extraordinary moment in cardiovascular medicine. Breakthroughs in artificial intelligence, precision medicine, structural heart interventions, digital health and preventive care are transforming how we prevent, diagnose and treat cardiovascular disease. Yet despite remarkable progress, cardiovascular disease remains the leading cause of death worldwide, reminding us that innovation alone is not enough.

Meeting this challenge requires collaboration on a global scale. That is why the ACC's partnerships with cardiovascular societies, ACC Chapters and Member Sections, industry leaders, governments and other stakeholders are more important than ever.

This month, *Cardiology* revisits some of the memorable moments that have taken place to date – highlighting the many different ways the College, its leaders and its members are transforming cardiovascular care worldwide.

Progress happens when knowledge is shared, perspectives are exchanged and ideas are advanced across borders, disciplines and care settings. ■



The ACC Assembly of International Governors unites the College's international chapters, sharing expertise and helping shape strategic priorities.



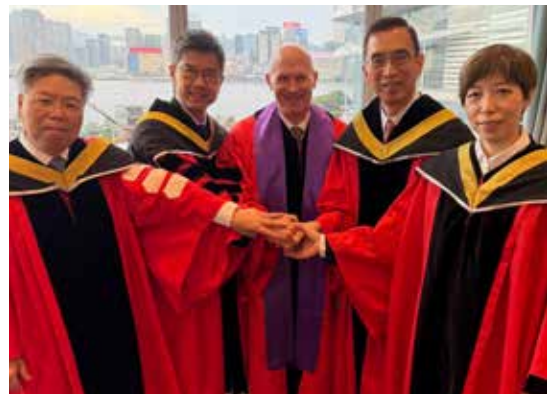
Society leaders from ACC, AHA, ESC and WHF at ESC Congress 2026 in Munich



Turning innovation into action: ACC's inaugural Global Industry Advisory Forum focused on the next steps for AI, prevention and sustainable cardiovascular care.



Celebrating members of the Japanese Circulation Society and the Japanese College of Cardiology.



From Australia to Brazil, to Panama to Hong Kong, ACC leaders are helping amplify the latest science, innovations and guidelines, while celebrating new members and forging key collaborations with ACC partner societies and chapters.



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