APHRS NEWSLETTER

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Contents

APHRS SUMMIT, AUCKLAND 2026 – SOCIETY NEWSLETTER REPORT

Written by: Prof Martin Stiles

Kia ora! The APHRS Summit 2026, held in Auckland, New Zealand from 27–28 February, brought together leading cardiac electrophysiology professionals from across New Zealand and the Asia-Pacific region. The meeting provided a valuable platform for knowledge exchange, collaboration and professional development.

Attendance and Participation

The Summit attracted a total of 173 participants including Electrophysiologists, Cardiac Physiologists, Scientists, Nurses and Exhibitor representatives. International representation was strong, with 39 delegates travelling from overseas, representing countries across Asia-Pacific. Australian participation was robust with 12 attendees and the remainder domestic NZ attendees. Attendees were welcomed by a traditional Māori welcome, including a spirited Haka!

Scientific Programme

The scientific programme, held on Saturday 28 February, featured an outstanding faculty of 13 international invited speakers and 14 New Zealand speakers. Experts from across the Asia-Pacific region shared insights on the latest advances in heart rhythm management, ensuring a high-quality and clinically relevant programme. Sessions were complemented by an esteemed group of international and local chairpersons, facilitating discussion and engagement throughout the day. The meeting closed in a spirit of regional fellowship, with the duet of Prof Young Hoon Kim and Prof Martin Stiles (guitar) singing “Po Karekare Ana / Yeon-ga” – Māori lyrics and Korean lyrics to the same tune, originally brought to South Korea by NZ soldiers fighting in the Korean War.

Pre-Summit Workshops

Two industry-supported sessions were held on Friday 27 February: an Advanced Surgical Ablation Workshop (including WetLab) supported by AtriCure, and the Affera Dinner Symposium hosted by Medtronic. These sessions provided hands-on learning opportunities and in-depth discussion of emerging technologies.

Pulse Day 2026

The APHRS coincided with Pulse Day 2026 – 1 March. We took the opportunity to promote pulse-taking on social media and highlight arrhythmia issues on Radio New Zealand. Across the wider Asian region, further Pulse Day activities were held and then followed by activities across Europe and around the world.

Social Programme

The Summit Networking Dinner took place at Wētā Workshop Unleashed, with over 100 guests in attendance. This event provided a unique and memorable setting (dining amongst props from Lord of the Rings, The Hobbit, Avatar and other movies) fostering networking and collegial connections among delegates. Many delegates took the opportunity to have fake wounds and tattoos applied to get into the spirit of the setting.

Board Meetings

On Sunday 1 March meetings of the APHRS Board were held. All Executive Board members were present, along with many past Presidents and Committee chairs. Many committee chairs attended virtually and all APHRS committees reported their activities to the Board.

Organisation

The Summit was convened by Dr Matthew O'Connor (Auckland), with support from the Organising Committee of Prof Martin Stiles (Hamilton), Dr Geoff Clare (Christchurch) and both CSANZ Wellington and APHRS Singapore staff.

Sponsorship and Support

The Summit received strong industry support, in particular from our Gold Sponsors; Abbott, Boston Scientific; Johnson & Johnson and Medtronic. We also acknowledge the valued support of Tātaki Auckland Unlimited (Host City Partner) and Tourism New Zealand (Destination Partner).

Conclusion

Overall, the APHRS Summit 2026 was a highly successful meeting, delivering a strong scientific programme, excellent international representation and valuable opportunities for professional connection across the region. We look forward to the next APHRS Summit in Shenzhen, China in March 2027.

PULSE DAY 2026: CONSOLIDATED REPORT

Introduction

Pulse Day, observed annually on 1 March, continues to serve as an important initiative in raising awareness on heart rhythm disorders and the importance of pulse checks for the early detection of atrial fibrillation (AF). This year, various countries across the Asia-Pacific region actively participated in Pulse Day through a series of educational campaigns, community outreach programmes, public screenings, and awareness activities aimed at promoting cardiovascular health among the public.

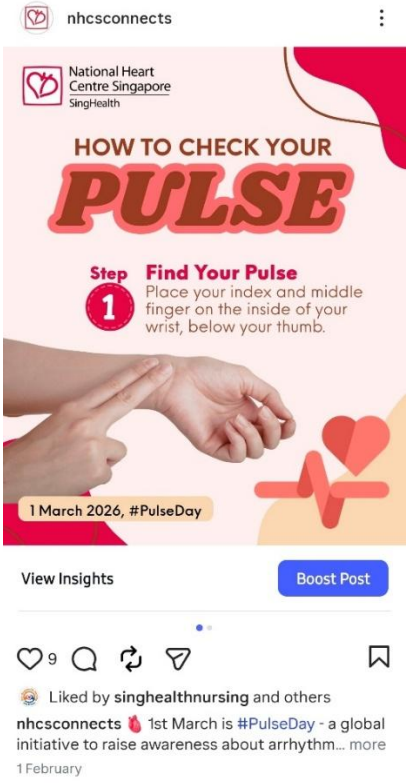
Healthcare professionals, medical societies, hospitals, and volunteers came together to engage communities and encourage individuals to regularly check their pulse as a simple yet effective step towards early diagnosis and stroke prevention. These activities highlighted the collective commitment of the region in advancing public awareness and strengthening efforts in the prevention and management of cardiac arrhythmias.

We are pleased to feature some of the Pulse Day activities organised by our member countries, showcasing the collaborative efforts and impact made throughout the region.

Europe

Singapore

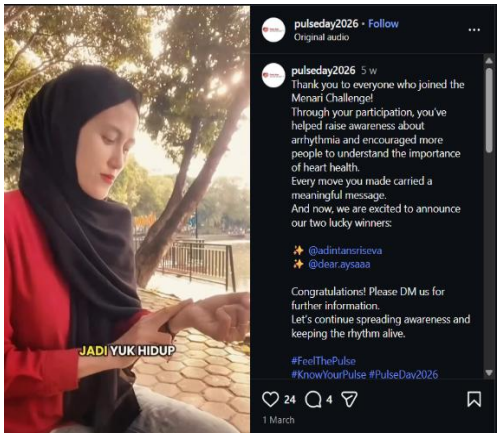
Educational social media posts were shared to demonstrate how to check one's pulse, alongside publicity posts to raise awareness on Pulse Day. In addition, a Chinese radio interview on heart palpitations featuring Dr Teo was aired on 91.3FM to educate the public on arrhythmia awareness and heart health.



Indonesia

The MENARI challenge is a global campaign encouraging the public to check their pulse for 30 seconds to detect early signs of arrhythmia. Participants are encouraged to share creative "MENARI" videos on social media, tagging @pulseday2026, as part of the Asia Pacific Heart Rhythm Society (APHRS) efforts.

A local healthcare influencer published a podcast episode with a local electrophysiologist on YouTube

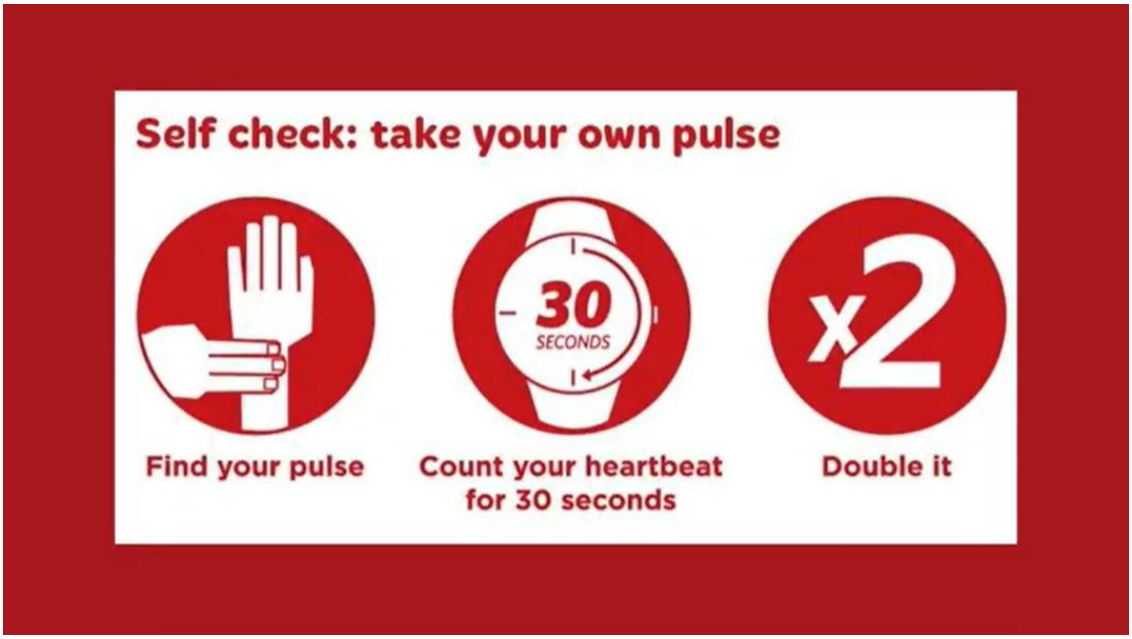


Cambodia

A coordinated national awareness campaign was conducted under the joint leadership of the Cambodian Heart Rhythm Society and the Cambodia Heart Association. The initiative aimed to translate the global objectives of Pulse Day into a locally relevant, patient-centered intervention focused on improving awareness of cardiac arrhythmias and promoting early detection through pulse self-assessment.

New Zealand

A video featuring Olympic winners was produced to raise awareness about arrhythmia and educate the public on how to measure their pulse.



Philippines

Cardiology fellowship training institutions throughout the country participated in a video challenge, where they produced educational and creative short videos in line with the themes of pulse checking and arrhythmia awareness. These videos included attending cardiologists, fellows, and hospital staff in lively and entertaining clips that were shared via the official PHRS Facebook page.

Facebook was heavily utilized to post various materials in relation to Pulse Day. These included invitations and teasers for various Pulse Day activities to encourage participation in the different events. Current PHRS president – Dr. Marcellus Francis L. Ramirez – posted a message to enjoin everyone in the celebration. Several infographics were also shared, including a facts-versus-myths post in the Filipino language which debunked common misconceptions regarding pulse and arrhythmias. Cardiologist social media influencers – Dr. Erdie C. Fadreguilan and Dr. Aileen Cynthia F. De Lara – also used their platforms to spread awareness via Facebook and YouTube posts. The entries to the video challenge were shared and got the most reach of all social media posts with over 43,000 views. Lastly, an episode of Usapang Puso sa Puso – a Facebook-based talk show hosted by the Philippine Heart Association – guesting Dr. Luigi Pierre S. Segundo was dedicated to the Pulse Day advocacy reaching over 11,000 views.

EHRA 2026: ILLUMINATING THE FUTURE OF ARRHYTHMIA MANAGEMENT

Written by: Dr Hailei Liu

The annual congress of the European Heart Rhythm Association (EHRA 2026), held from 12–14 April 2026 in Paris, once again demonstrated its position as one of the premier global forums in cardiac electrophysiology. Under the theme “Illuminating arrhythmia management,” the meeting brought together a diverse and international community of clinicians, researchers, allied professionals, and industry partners to exchange knowledge and shape the future direction of arrhythmia care.

Building on the legacy of previous years, EHRA 2026 successfully combined scientific rigor with practical clinical relevance, reflecting the rapid evolution of electrophysiology as a discipline increasingly driven by innovation, multidisciplinary collaboration, and precision medicine.

A Global Platform for Innovation and Exchange

EHRA 2026 was characterized by strong international participation, with representation from Europe, the Asia-Pacific region, and beyond. The congress emphasized inclusivity and collaboration, providing a platform where regional perspectives could converge and inform global practice.

The scientific program was thoughtfully structured to integrate multiple dimensions of learning. Late-breaking clinical trials, state-of-the-art lectures, case-based discussions, and hands-on educational sessions were interwoven to ensure a comprehensive experience. This design facilitated not only the dissemination of new evidence but also critical appraisal and practical interpretation.

Importantly, EHRA continues to distinguish itself by maintaining a balance between technological innovation and patient-centered care, ensuring that advances in the field translate meaningfully into improved clinical outcomes.

Late-Breaking Science and Emerging Evidence

A central highlight of EHRA 2026 was the presentation of several late-breaking clinical trials, including studies such as CEPAF, ULYSSES, and SOLVE-AF, which contributed important insights into the management of atrial fibrillation and related arrhythmias.

These studies collectively reflect several broader trends shaping contemporary electrophysiology:

- Increasing emphasis on early and proactive rhythm control strategies
- Reducing access-related complications
- Expansion of evidence-based approaches to complex arrhythmia substrates

Beyond individual trial results, the congress highlighted a shift toward more nuanced, phenotype-driven approaches to arrhythmia management, recognizing the heterogeneity of patient populations and the limitations of a “one-size-fits-all” strategy.

Technological Innovation: A Transformative Era

One of the most striking aspects of EHRA 2026 was the rapid advancement and clinical integration of novel technologies.

- **Pulsed Field Ablation (PFA)**
Pulsed field ablation remained a major focus of discussion, reflecting its growing adoption in clinical practice. Compared with traditional thermal ablation techniques, PFA offers the potential advantages of myocardial selectivity, reduced collateral damage, and improved procedural safety profiles.

At EHRA 2026, new data real-world experiences further reinforced its role as a transformative technology in atrial fibrillation ablation. Discussions extended beyond pulmonary vein isolation to explore its potential application in more complex substrates, although long-term durability and optimal procedural strategies remain areas of active investigation.

- **Physiological Pacing**
Another key area of innovation was conduction system pacing, particularly left bundle branch area pacing. Accumulating evidence suggests that physiological pacing may offer improved ventricular synchrony and clinical outcomes compared with conventional right ventricular pacing and even traditional cardiac resynchronization therapy in selected patients.

EHRA 2026 provided important updates on procedural techniques, success rates, and long-term outcomes, underscoring the growing maturity of this approach.

Digital Health and Artificial Intelligence

The integration of digital health technologies and artificial intelligence (AI) into arrhythmia management was also prominently featured. From wearable devices enabling continuous rhythm monitoring to AI-assisted ECG interpretation and risk prediction models, the field is moving toward a more data-driven paradigm.

These developments are particularly relevant for large and diverse populations, such as those in the Asia-Pacific region, where scalable and cost-effective solutions are essential.

Bridging Evidence and Clinical Practice

A defining strength of EHRA 2026 was its focus on translating evidence into practice. Sessions addressed a wide range of real-world clinical challenges, including:

- Optimization of post-ablation management, including the role and duration of antiarrhythmic therapy
- Implementation of same-day discharge protocols following invasive procedures
- Strategies for stroke prevention and anticoagulation in complex patient populations
- Management of comorbid conditions, including heart failure and cardiometabolic disease

These discussions highlighted the importance of individualized care pathways and shared decision-making, particularly in the context of increasingly complex therapeutic options.

Education, Mentorship, and the Next Generation

EHRA 2026 placed strong emphasis on education and professional development. Dedicated sessions for young electrophysiologists provided opportunities for mentorship, skills development, and career guidance.

Interactive formats, including case-based discussions and live demonstrations, fostered active engagement and facilitated knowledge transfer across different levels of experience. The strong presence of early-career clinicians and researchers reflects the vitality and sustainability of the field.

Beyond the Score: Stroke Risk Stratification in Atrial Fibrillation (EHRA–APHRS Joint Session)

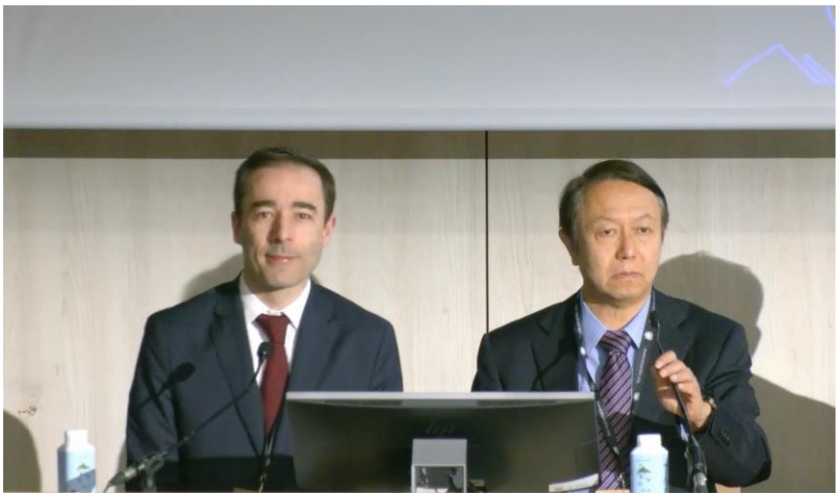
This EHRA–APHRS joint session highlighted the urgent need to move beyond traditional clinical scores for stroke risk stratification in atrial fibrillation, particularly in the Asia-Pacific region, where AF burden and stroke risk remain high and patient profiles are highly heterogeneous. Speakers emphasized the limitations of conventional tools such as CHA_2DS_2-VASc, which may not fully capture dynamic and population-specific risk. Emerging approaches—including imaging markers of atrial remodelling, circulating biomarkers, and AI–based prediction models—were presented as promising strategies to enable more individualized and precise risk assessment. Importantly, these advances are highly relevant to the Asia-Pacific region, where differences in genetics, comorbidities, and anticoagulation practices underscore the need for tailored risk stratification frameworks. The session underscored a shift toward precision-based stroke prevention in atrial fibrillation, with future efforts needed to validate these tools in diverse, real-world populations across Asia-Pacific.

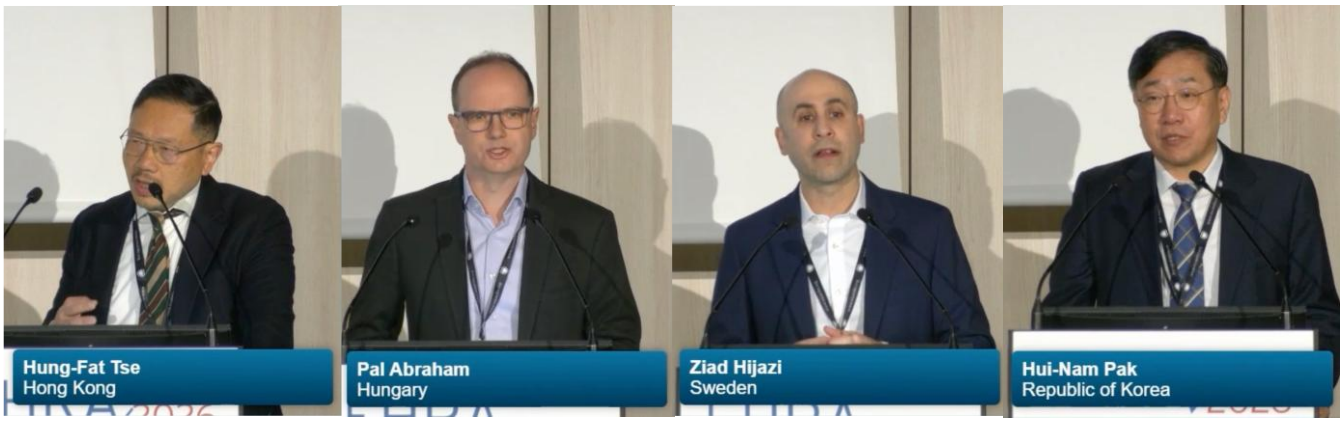
Implications for the Asia-Pacific Community

For the APHRS community, the insights from EHRA 2026 carry important implications. First, the rapid adoption of technologies such as PFA and conduction system pacing highlights the need for timely evaluation and contextualization within Asia-Pacific healthcare systems. Differences in patient demographics, disease burden, and resource availability necessitate region-specific strategies for implementation. Second, the growing emphasis on data-driven and personalized medicine aligns closely with ongoing efforts in the region to leverage large-scale datasets and advanced analytics. Finally, EHRA 2026 underscores the importance of continued international collaboration. Strengthening partnerships between EHRA and APHRS will be essential to accelerate innovation, harmonize clinical practice, and ultimately improve patient outcomes globally.

Looking Ahead

EHRA 2026 reaffirmed the dynamic and rapidly evolving nature of cardiac electrophysiology. With continued advances in technology, expanding clinical evidence, and increasing integration of digital health, the field is entering a new era of precision and personalization. As the global electrophysiology community looks ahead, the lessons and insights from EHRA 2026 will play a critical role in shaping future research, clinical practice, and collaborative efforts. The next EHRA Congress, to be held in Helsinki in April 2027, will undoubtedly build upon this momentum and continue to illuminate the path forward in arrhythmia management.





LEADLESS PACEMAKERS AFTER A DECADE: ACHIEVEMENTS, BARRIERS, AND EMERGING TECHNOLOGIES

Written by: Yoshifumi Ikeda
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Introduction

A decade has passed since leadless pacemakers (LLPMs) were first introduced into clinical practice. Among cardiac implantable electronic devices (CIEDs), transvenous pacemakers (TVPMs)—the oldest modality—have dramatically improved the quality of life for patients with bradyarrhythmia. These systems consist of a pulse generator and transvenous leads inserted into the cardiac chambers. However, this design is inherently associated with several limitations, including a relatively high incidence of lead-related and device pocket-related complications. [1]

LLPMs were developed to overcome these limitations. Their capsule-based design, which is implanted directly within the cardiac chamber, eliminates the need for transvenous leads and subcutaneous pockets. As a result, LLPMs impose fewer restrictions on physical activity and offer clear cosmetic advantages. Currently, two major fixation mechanisms are available: tine-based and screw-based systems (Figure 1). Clinical studies have demonstrated high procedural success rates and lower complication rates compared with conventional TVPMs. [2,3]

Figure 1. Currently available leadless pacemakers. From left: MicraTM(Medtronic), a tine-based leadless pacemaker; AVEIR AR™, and AVEIR VR™ (Abbott), screw-based leadless pacemakers.

Despite these advantages, the market penetration of LLPMs has not increased as substantially as anticipated over the past decade. Although LLPMs account for approximately 15–20% of the global pacemaker market in terms of revenue, their share remains considerably lower when assessed by implantation volume.

This review highlights the limitations of current LLPM technologies and discusses the key challenges and potential solutions required for their future development.

Limitations of Leadless Pacemakers

One of the key limitations of current LLPMs is that they have not yet achieved the functional versatility of TVPMs. To minimize device size, battery capacity remains constrained, which in turn limits both device functionality and longevity. The first-generation tine-based LLPM, the Micra Transcatheter Pacing System, was designed exclusively for right ventricular implantation and provided only VVI pacing, without the ability to detect atrial arrhythmias. Subsequent technological advancements introduced accelerometer-based atrial sensing, enabling VDD-like operation; however, the degree of atrioventricular synchrony remains suboptimal because atrial activity is not directly measured. [5]

In contrast, screw-based LLPM systems allow direct implantation in both the atrium and ventricle, enabling dual-chamber (DDD) pacing through device-to-device communication. While this approach achieves a higher degree of atrioventricular synchrony, it relies on specialized intracardiac communication technology, which is associated with increased energy consumption. Consequently, battery longevity—particularly for the atrial device—is limited to approximately five years in DDD mode. In addition, constraints in external communication currently restrict the implementation of remote monitoring in these systems. [6,7]

The major concerns associated with LLPMs is the occurrence of procedure-related complications. Although LLPMs eliminate lead- and pocket-related complications inherent to transvenous systems, implantation requires the use of a relatively large delivery sheath (27 Fr), which raises procedural safety concerns despite the small device size (approximately 6.7 mm in diameter).

In the Micra VR registry, which included 928 patients representative of real-world clinical practice—including 10.2% dialysis patients—procedure-related myocardial perforation or pericardial effusion occurred in 6 cases (0.65%), and there were 2 procedure-related deaths (0.22%).[8] Similarly, in a larger registry of Micra VR implantation involving 1,809 patients, the 3-year major complication rate was 4.1%, significantly lower than the 8.5% reported in historical cohorts of transvenous pacemakers. However, 5 procedure-related deaths were observed, 2 of which were attributable to myocardial perforation. [9]

In a large-scale database study comparing Micra AV (7,471 patients) with transvenous pacemakers (107,800 patients), the matched 90-day complication rate was lower in the LLPM group (8.6% vs. 11.0%, $p < 0.0001$). In contrast, all-cause mortality was significantly higher in the LLPM group (6.0% vs. 3.5%, $p < 0.0001$). [10] Although there was no clear evidence linking procedure-related complications to increased mortality, this analysis was based on propensity score matching, which cannot fully eliminate residual confounding. Importantly, LLPMs are often preferentially implanted in patients with poorer baseline prognoses, which may partially account for the observed differences in mortality. Indeed, LLPMs are more frequently implanted in elderly patients, and advanced age has been identified as a determinant of LLPM selection, suggesting that these devices are commonly used in higher-risk populations. [11]

In elderly cohorts, LLPMs have been associated with a reduction in device-related complications compared with conventional transvenous systems; however, no significant difference in readmission rates has been observed. Furthermore, an analysis of approximately 800 elderly patients from the Micra AV registry demonstrated 99 deaths (>10%) at 18 months of follow-up, underscoring the high-risk nature of this population. [12,13] Therefore, more stringent safety standards are required for LLPM candidates at higher risk.

Extraction of Leadless Pacemakers

Why, then, has the adoption of LLPMs in younger patients remained limited?

A key concern specific to LLPMs is the issue of device retrieval. Because these devices are implanted directly within the cardiac chambers, progressive encapsulation by endocardial tissue occurs over time. As a result, device replacement at the time of battery depletion is often performed by implanting an additional device rather

than removing the existing one, thereby limiting the total number of devices that can be safely accommodated within the heart. If reliable and safe extraction techniques were established, the use of LLPMs in younger patients could potentially expand.

Tine-based leadless pacemakers were not originally designed with extraction as a primary consideration. Most reported retrieval cases have been performed in the acute phase, during which extraction is technically feasible and relatively safe. [14,15] However, Funasako et al. demonstrated that chronic-phase retrieval may also be achievable by advancing a delivery catheter and recapturing the device within a sheath, thereby disengaging the fixation tines. [16]

In contrast, screw-based LLPM systems are equipped with dedicated retrieval mechanisms. These devices have been reported to be removable even after relatively long implantation periods of up to nine years. However, the mean implantation duration in these reports was approximately 3.2 years, which does not represent truly long-term follow-up. Therefore, the feasibility and safety of extraction after more prolonged implantation periods remain uncertain. [17]

Development of Safer Implantation Techniques

The development of safer implantation strategies is essential for the broader adoption of LLPMs.
For leadless pacemakers, implantation within the right ventricular septum is generally recommended to enhance procedural safety. However, even when septal placement is intended under fluoroscopic guidance, devices are not infrequently deployed in the right ventricular free wall, which may result in subclinical myocardial perforation. [18]

Achieving accurate septal positioning is therefore critical for improving procedural safety. Intraprocedural imaging modalities, such as ultrasound, can be utilized to confirm both device location and myocardial integrity at the implantation site. The incorporation of these imaging techniques may facilitate more precise targeting and contribute to the development of safer implantation approaches (Figure 2). [19,20]

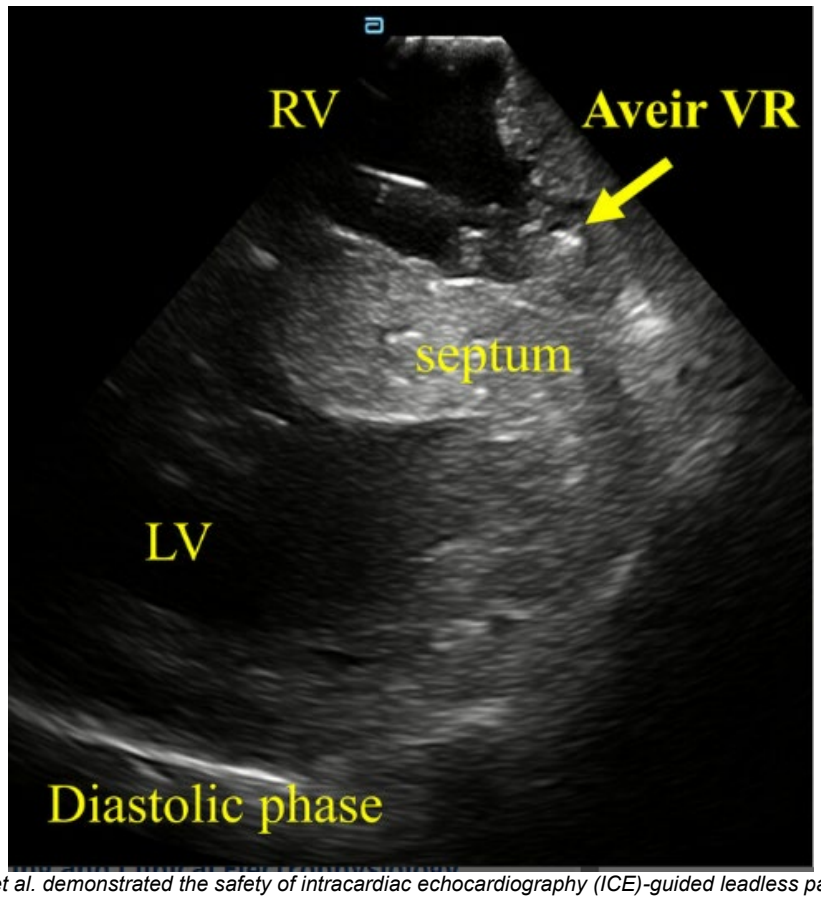

Figure 2. Matsumoto K et al. demonstrated the safety of intracardiac echocardiography (ICE)-guided leadless pacemaker implantation in patients with contraindications to contrast agents, such as contrast media allergy. [19]

Emerging Technologies

Development of next-generation LLPM technologies is actively progressing. Boston Scientific has introduced a leadless pacemaker capable of communicating with subcutaneous implantable cardioverter-defibrillators (S-ICDs), enabling the delivery of anti-tachycardia pacing (ATP). [21]

Further innovation is expected in two distinct directions. First, the development of leadless systems capable of conduction system pacing is being actively pursued, typically via transvenous approaches such as the jugular route. In parallel, epicardial LLPMs using intramediastinal approaches are also under investigation. This approach has become feasible with the emergence of extravascular implantable cardioverter-defibrillators (EV-ICDs), which have established novel access routes within the mediastinum. [22,23]

However, to the best of current knowledge, further development is required to achieve safer devices suitable for long-term use, particularly in younger patients.

Conclusion

Further technological advances are essential to enable communication capabilities comparable to those of TVPMs and to achieve similar device longevity. For LLPMs to surpass conventional systems, these innovations must be accompanied by the establishment of safer implantation strategies and reliable extraction techniques applicable across a broad range of clinical scenarios.

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SETTING THE PACE WITH AVEIR™ SINGLE AND DUAL CHAMBER LEADLESS PACEMAKERS

Written by: Leonard Ganz, MD
Divisional Vice President of Medical Affairs and Chief Medical Officer
Cardiac Rhythm Management, Abbott

Figure 1. Abbott's AVEIR Leadless Pacemakers including AVEIR AR (left) and AVEIR VR (right)

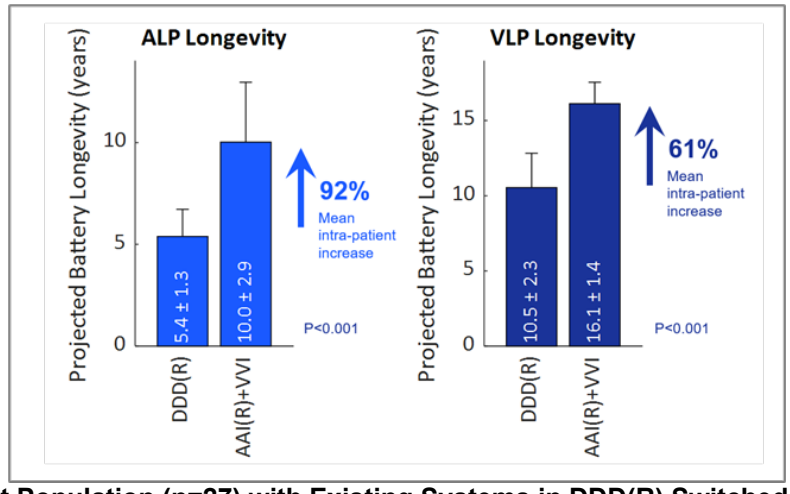
Introduction

Leadless pacing continues to reshape bradycardia management as clinicians seek to minimize complications associated with transvenous leads and pockets. With global adoption accelerating, there is a growing need for leadless platforms that provide the flexibility, physiologic performance, and adaptability of modern dual-chamber pacing systems. Abbott's AVEIR™ platform was developed to address these needs, offering a tailored approach that supports atrial, ventricular, or dual-chamber pacing—without leads and without a subcutaneous pocket.

The AVEIR DR Dual Chamber Leadless Pacemaker System is the world's first and only dual-chamber leadless pacing platform.1 It consists of two independent leadless pacemakers—one in the right atrium and one in the right ventricle—that can function independently or together (see Figure 1). Clinicians can begin with atrial only, ventricular only, or dual chamber pacing in patients.

Alternatively, AVEIR VR can be implanted initially for VVI(R) pacing if indicated. In either case, upgrading to dual-chamber support if clinical needs evolve is enabled by Abbott's proprietary i2i™ implant-to-implant communication once the second device has been implanted. Of course, this dual chamber functionality can also be implanted de novo with an AVEIR DR system if indicated. Long-term retrievability allows either device to be replaced at the end of service without leaving abandoned hardware.

Continued AVEIR Innovation



Subset Patient Population (n=27) with Existing Systems in DDD(R) Switched to AAI(R)+VVI

Figure 2. Expanded AVEIR capabilities extend device longevity and personalize patient care

Since approval, Abbott has expanded the capabilities of the AVEIR platform with enhancements that both extend device longevity and personalize patient care (see Figure 2) AAI(R)+VVI pacing mode, designed for patients with sinus node dysfunction and preserved AV conduction, increases projected atrial battery life by 92% (from 5.4 ± 1.3 years to 10.0 ± 2.9 years) and ventricular longevity by 61% (from 10.5 ± 2.3 years to 16.1 ± 1.4 years).2 This mode is also useful in situations in which minimal ventricular pacing is expected. While in this mode, there is a feature to mitigate against crosstalk inhibition and maintain patient safety. If the ventricular pacing burden increases, or the patient has symptoms related to the back-up ventricular pacing, the DDD(R) mode can be restored.

The second-generation AVEIR AR2 atrial device builds on this efficiency, with a 25% improvement in longevity compared with the original AVEIR AR, independent of pacing mode programmed.

Finally, the AVEIR patient transmitter extends remote follow-up to all patients with AVEIR leadless pacing devices (see Figure 3).

Figure 3. Abbott's AVEIR patient transmitter

Long-term retrievability—central to the system's design—is supported by extensive clinical evidence. In a multicenter analysis, chronic ventricular retrieval demonstrated an 87.6% success rate across 234 attempts, including 100% success in devices implanted for six to nine years, with a 3.9% retrieval-related complication rate.3 Atrial retrieval data demonstrated 100% success for devices retrieved more than one year post-implant, with no procedural complications, average retrieval time of 12.3 minutes, fluoroscopy time of 12.7 minutes, and excellent electrical performance in replacement devices. The mean dwell time for these devices was 23.5 months, and in the six cases in which atrial reimplantation was attempts, procedures were straightforward and successful.[4]

Disclaimer: The availability, regulatory status, and approved indications of the devices or features described may vary by country or region. This information is not intended to promote or advertise the device in jurisdictions where it is not approved.

Proprietary i2i™ Communication Enables Exceptional AV Synchrony

The AVEIR DR system achieves physiologic dual-chamber pacing through beat-to-beat i2i communication between co-implanted atrial and ventricular devices. At in-clinic assessments at three months post-implant, AV synchrony exceeded 95% across differing heart rates, multiple postures and activities5 Even when a much stricter definition of AV synchrony was used (see Figure 4), AV synchrony remained excellent.

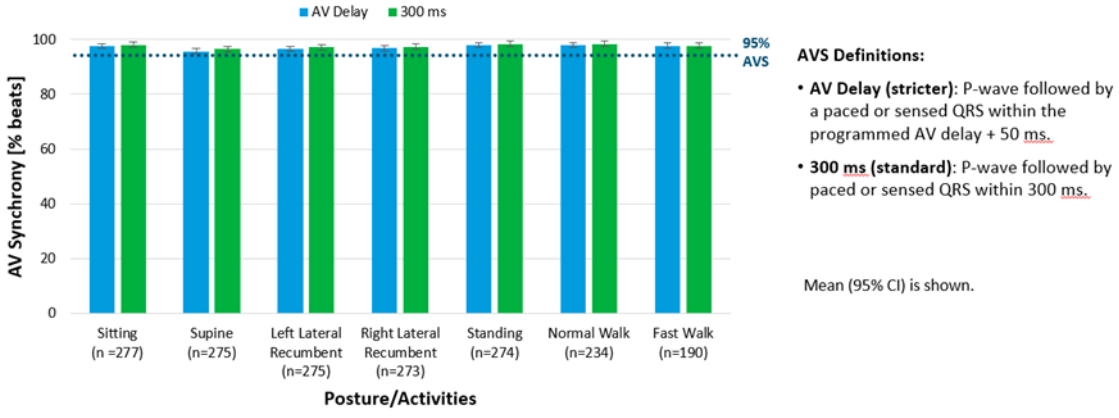


Figure 4

A 24-hour ambulatory Holter study demonstrated that this performance is sustained during daily activity. Among 47 analyzable patients, mean AV synchrony was 96.7%, supported by high bidirectional communication success. AV synchrony was excellent across all heart-rate ranges, including rates above 100 bpm. No episodes of oversensing, under sensing, loss of capture, pauses, or inappropriate mode switches were observed.6 These results confirm that the AVEIR DR system provides consistent dual-chamber physiologic pacing in both controlled and real-world environments.

Real-World Evidence Demonstrates Clear Advantages Over Transvenous Pacemakers

Real-world evidence (RWE) utilizing the United States Medicare fee for service database has further demonstrated the benefits of the AVEIR platform compared with traditional transvenous pacemakers (TVPs). Atrial leadless pacing with AVEIR AR showed lower device-related complications at 30 days, zero device-related reinterventions at three months, and significantly reduced all-cause mortality at three months compared to transvenous single chamber AAIR pacemakers.[7]

In a large single-chamber comparison, of AVEIR VR and transvenous VVIR pacemakers, AVEIR VR demonstrated a 30% reduction in overall complications, 47% reduction in device-related complications, and 61% reduction in device-related reinterventions over 12 months, along with significantly lower all-cause mortality at one year.[8]

Dual-chamber outcomes further reinforce these findings (see Figure 5). At six months, AVEIR DR demonstrated significant reductions in overall complications, device-related complications, and device-related reinterventions compared with dual-chamber TVPs, with comparable all-cause mortality.[9]

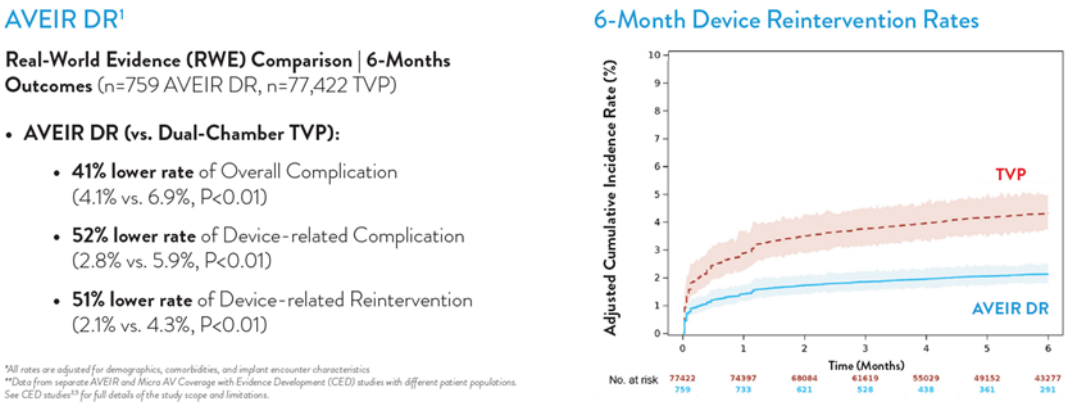


Figure 5. Six-month device reintervention rates

Additional real-world evidence comparing AVEIR AR to transvenous dual chamber in pacing in sinus node dysfunction patients will be presented at EHRA in April 2026 in Paris as a late-breaking clinical trial.

Next-Generation Physiologic Pacing: AVEIR CSP

Building on the modular structure of the AVEIR platform, Abbott is advancing into the realm of physiologic pacing with the world's first investigational leadless Conduction System Pacing (CSP) technology. CSP seeks to restore the heart's natural electrical activation by delivering pacing directly to the left bundle branch area (LBBA).

The first-in-human AVEIR CSP acute feasibility study—the world's first evaluation of a leadless pacemaker capable of conduction system pacing—demonstrated successful implantation of the device deep within the interventricular septum, with many patients achieving left bundle branch area pacing.[10] Principal investigator Dr. Vivek Reddy noted that this study demonstrated "the feasibility of a leadless pacing system to facilitate conduction system pacing in the left bundle branch area," offering "a novel approach to pacing therapy" and potentially enabling "a more physiologic way of stimulating the heart."

Work on this important project continues, with initial chronic feasibility data for the AVEIR CSP system to be presented as a late-breaking clinical trial and HRS Annual Scientific Sessions in Chicago in April 2026.

A New Standard in Leadless, Physiologic, Patient-Centered Pacing

As the fields of leadless pacing and physiologic pacing converge, the AVEIR platform is poised to redefine bradycardia therapy. Its modular architecture, long-term retrievability, and ability to maintain physiologic AV synchrony offer clinicians a flexible and durable foundation for treating a wide range of rhythm disorders. With ongoing enhancements—including next-generation atrial devices, longevity-extending programming modes, expanding real-world evidence, and the introduction of leadless conduction system pacing—Abbott is shaping a future in which fully leadless, fully physiologic pacing becomes accessible to more patients worldwide.

The continued evolution of the AVEIR platform positions it to support the next decade of innovation in rhythm management, enabling clinicians to deliver patient-centered pacing strategies for all pacing indications, with the capacity to evolve as clinical needs change.

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INDIAN HEART RHYTHM SOCIETY 2025 SCIENTIFIC SESSION (IHRSCON 2025)

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The 17th annual scientific meeting of the Indian Heart Rhythm Society (IHRS) was held from 31st October 2025 to 2nd November 2025 in Vizag city, India. It showcased numerous brainstorming sessions as well as a sneak peek into the latest developments in the world of cardiac electrophysiology. The meeting is a much-awaited gathering of scientific sessions, featuring leading names from the global EP community presenting their finest work. In its 17th annual edition, IHRSCON 2025 brought together renowned cardiac electrophysiologists, cardiologists, fellows, device specialists, and industry experts.

Scientific Overview

Under the able guidance of the IHRS Patrons and IHRS Society Executives, the scientific sessions sought to highlight the latest advances in the EP field, especially in the complex arrhythmia management of atrial fibrillation, ventricular tachycardia, and conduction system pacing. The organising chairman of the event, Dr Narsimhan Calambur, presented the annual theme, “One Rhythm, One Goal: Advancing EP through collaboration. “ The organising team led by Dr Allamshetty Suresh welcomed all national and international attendees and ensured that every effort was made to make the event a true academic feast. Original research presentations and abstracts were delivered to an eager audience. The sessions also included Fellows’ workshops, case discussions, and panel debates.

Day 1 Hall A

The conference started with the session, “Basics of EP for Fellows.” Aimed at early-career EPs, the session sought to demystify the complex world of EGMs, entrainment manoeuvres, and the practical aspects of catheter ablation for young clinicians. As always, it was a well-attended and highly interactive session, with masters of EP covering topics such as basic EGM analysis, anterograde vs retrograde conduction, parahisian pacing, and principles of entrainment. The session then progressed to an understanding of the biophysics of ablation and the practical aspects of catheter ablation. Complex EGM/device tracings were discussed in the session.

The Luncheon session was another academic feast. Global electrophysiology stalwarts brought a wealth of insight to the stage, speaking on contemporary advances that are rapidly reshaping the field. The discussion spanned on the emerging ablation technologies, application of Artificial Intelligence in the diagnosis and management of AF, cost effective way of HPSD AF Ablation technique and a perspective on Pulsed field ablation. Following the tea break in the same session, the Indian EP masters of the field provided an exhaustive overview of the approach to recurrent SVT.As the day progressed, an exciting session on contemporary VT mapping and ablation unfolded. The use of ICD EGMs in planning VT ablation, substrate-based mapping, epicardial VT approaches, and intramural VT ablation strategies provided a rich academic experience for the audience.

A full session on paediatric arrhythmias enthralled the audience, covering topics such as the medical management of life-threatening arrhythmias, the choice of ablation in children, and issues related to device implantation, among others.
In the evening symposium, topics included sudden cardiac arrest, left atrial flutter ablation, and issues in anticoagulation management.

The day-long academic flow was wrapped up with dinner along with the convocation ceremony for Fellow of Indian Heart Rhythm Society and IHRS Lifetime Achievement Award 2025.

Day 1 Hall B

This track included sessions for allied professionals and fellows. The topics included setting up of an EP lab, troubleshooting of devices and EP EGMs. Complex case discussions, as well as discussions on device hardware, were the highlight of these sessions. Topics such as basic EP mapping, tips and tricks of SVT ablation, and ILAM mapping kept the fellows engaged throughout. Overall, EP fellows had a bright, interesting day followed by dinner and the convocation for Fellows of IHRS.

Day 2 Hall A

The day started with a “Learn from Masters” session focusing on cardiac anatomy, including dissection-based learning and fluoroscopic anatomy. This was followed by a brainstorming session on device troubleshooting and interesting EP cases, which proved to be a crowd-puller.

A structured program on AF management included topics such as epicardial AF ablation, atypical right atrial flutters, and AF in structural heart disease, adding further depth to the day. In the session on resynchronisation therapy in heart failure, emerging concepts such as atrial resynchronisation, the future of CSP in heart failure, and CSP versus CRT were discussed, with speakers reviewing current evidence and real-world outcomes.

The evening session featured a panel discussion on everyday challenges in EP practice. This included discussions on device pockets, overnight TPI, and PPI in the geriatric population.

Day 2 Hall B

The day progressed with interesting sessions on resynchronisation therapy, sudden cardiac death, VT management, channelopathies, and inflammatory cardiomyopathies. In the sudden cardiac death session, discussions focused on the unique challenges of SCD management in India as well as the status of CPR training programmes.

The VT management session was another crowd-puller, with topics such as idiopathic VF, NSVT, and substrate identification and management drawing an attentive audience. The channelopathies and inflammatory cardiomyopathies, with their unique presentations and management challenges, were discussed in detail.

Given the shared focus of interventional cardiologists and electrophysiologists on avoiding procedural errors, a dedicated session on nightmares and complications of device and EP procedures provided valuable learning for all. The EP in Afghanistan session added an international flavour, offering fresh perspectives for young clinicians in their early career stage.

Day 3

Day 3 of the conference began with sessions on inherited cardiomyopathies. This included topics on high-risk arrhythmogenic substrates as well as learning on genetic testing in such patients. In line with global developments, a talk on artificial intelligence in electrophysiology attracted significant interest.

This was followed by a special session of women in EP. This year’s theme was arrhythmias in pregnancy. The all-women session focused on the management of arrhythmias in a setting where two lives are connected and at risk of hemodynamic deterioration. It was a well-attended session that received strong appreciation for its content and detailed discussions on this important but relatively underexplored area.

As the day progressed, a joint session of IHRS (Indian Heart Rhythm Society) and APCSI (Andhra Pradesh Cardiology Society of India) took center stage. The next session focused on the pharmacological management of arrhythmias, where drug therapy, efficacy, and complications in rhythm disturbances were discussed.

Unexplained loss of consciousness is a common problem that may lead to life-threatening outcomes. The topic was discussed at length with special emphasis on syncope in the elderly, refractory syncope, and tailored diagnostic approaches.

Conclusion

In conclusion, the 17th annual scientific session of the prestigious Indian Heart Rhythm Society was a well-planned compilation of cutting-edge research, global perspectives and technological innovations in the world of EP. It had a balanced mix of reviewing what's known and a deep dive into the unknown which is the essence of science. What made the event even more fulfilling was the wonderful Vizag weather and the venue of the event being by the side of Rushi Konda Beach. It was an enriching experience and a promise to return more knowledgeable and better informed than before.

INDIA’S MULTIFACETED EDUCATIONAL PROGRAMS

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Introduction

Cardiac electrophysiology (EP) in India has evolved from a relatively obscure cardiac sub special-ty into a rapidly expanding and impactful field within the healthcare sector. A growing and dynamic community of electrophysiologists, operating in a competitive yet collaborative environment with access to cutting-edge technologies, is driving this progress. This advancement is reflected in the increasing number of high-quality publications and original research contributions emerging from India. From the establishment of the first EP laboratory in 1975 to the widespread availability of advanced ablation techniques and device-based therapies today, the Indian EP community has made remarkable strides. Indian electrophysiologists benefit from a robust ecosystem of national and regional scientific meetings held throughout the year. These forums facilitate the exchange of innovative ideas and cutting-edge research, while also providing structured educational opportunities for early-career electrophysiologists. In addition to major annual conferences, a growing number of hybrid and virtual meetings take place year-round, fostering continuous engagement, meaningful discussions, and enriched academic learning.

National Electrophysiology Meetings in India

1. IHRSCON – The Indian Heart Rhythm Society Flagship Conference

The annual scientific session of the prestigious Indian Heart Rhythm Society (IHRS), IHRSCON, stands as the foremost national meeting in cardiac electrophysiology in India. It represents the highest academic platform in the country, drawing enthusiastic participation from both early-career and senior electrophysiologists. This

three-day event brings together electrophysiologists, cardiologists, international faculty, and al-lied professionals, creating a unique environment for the exchange of contemporary knowledge and innovative perspectives. The program integrates original research and review presentations, live and recorded case discussions, panel deliberations, abstract sessions, and an active industry interface.

IHRSCON 2025, held in Visakhapatnam (Vizag) from 31 October to 2 November 2025, was centered around the theme "One Rhythm, One Goal: Advancing EP through Collaboration." The meeting brought together leading national and international experts in an atmosphere of academic rig-our and collaboration, with participation from countries including the USA, UK, Taiwan, and Australia—reflecting India's growing integration into the global EP community.

The scientific sessions at IHRSCON 2025 focused on key areas such as complex arrhythmia management, advances in catheter ablation, contemporary device therapies—including cardiac resynchronization therapy (CRT), conduction system pacing (CSP), and leadless pacing—as well as next-generation mapping technologies and the integration of artificial intelligence. A highlight of the meeting was the IHRS–HRS joint session, underscoring the strong academic collaboration be-tween the Indian Heart Rhythm Society and the Heart Rhythm Society (HRS), and facilitating global exchange of knowledge and perspectives.

The conference also demonstrated a strong commitment to inclusivity and training. A dedicated Women-in-EP session emphasized the importance of supporting and advancing women in the field. In addition, specialized forums for early-career electrophysiologists—including fellow training programs, hands-on workshops, and simulator-based learning modules—provided valuable opportunities for skill development. The industry showcased cutting-edge technological innovations, further enriching the academic experience.

2. CSI Annual Conference (Cardiology Society of India)

The esteemed Cardiology Society of India (CSI) hosts its annual conference encompassing all ma-jor subspecialties of cardiology. Within this broad scientific program, dedicated electrophysiology sessions provide a focused platform where leading national and international experts share their insights on contemporary arrhythmia management. A joint CSI–IHRS session further strengthens academic collaboration, highlighting areas of mutual growth and future opportunities in the field of cardiac electrophysiology.

At the 2025 meeting, device-oriented workshops emerged as a key highlight, with hands-on and practical sessions on leadless pacing, physiological pacing, and atrial fibrillation ablation drawing significant interest from participants.

Regional Electrophysiology Meetings in India

Regional meetings play a critical role in making electrophysiology education more accessible, particularly for electrophysiologists and cardiologists practicing outside major academic centers. These forums provide valuable opportunities for collaborative knowledge sharing and foster mutual academic growth. Across India, several regional EP meetings are held throughout the year, each witnessing enthusiastic participation from the local medical community.

A distinctive feature of these meetings is the active involvement of inter-regional faculty and delegates, which enriches the scientific discourse and brings diverse perspectives to the management of cardiac arrhythmias.

State-level / Regional meetings: Across India, several states and union territories—including Tamil Nadu, Kerala, Rajasthan, Maharashtra, Telangana/Andhra Pradesh, Gujarat, and Delhi—regularly host regional electrophysiology meetings that provide valuable opportunities for active learning and academic exchange.

Certain cities have emerged as key EP hubs where much of the academic and clinical activity is concentrated. In South India, enters such as Chennai, Coimbatore, Bengaluru, and Hyderabad lead the way, while in North India, Delhi NCR, Jaipur, and Chandigarh serve as prominent hubs. In the western region, Mumbai, Pune, and Ahmedabad are major contributors, whereas Kolkata, Bhubaneswar, and Guwahati represent important centers in East and Northeast India.

Overall, India now hosts a robust and well-connected network of state-level EP meetings that are increasingly interactive, technology-driven, and globally inclusive. Inter-regional participation has become the norm, with faculty and delegates actively engaging across geographic boundaries. Notably, fellows and early-career

electrophysiologists are increasingly participating in multiple meetings, significantly enriching their academic exposure and learning experience.

High-volume centers across India play a pivotal role in advancing electrophysiology education and academic exchange. Institutions such as AIIMS (New Delhi), Fortis Hospital (New Delhi), Apollo Hospitals (New Delhi and Chennai), the Jayadeva Institute of Cardiovascular Sciences and Research (Bengaluru), and the Sree Chitra Tirunal Institute for Medical Sciences and Technology (Thiruvananthapuram), along with dedicated academic platforms like the Kovai EP Meet and the International Conference on Cardiac Electrophysiology Research (Mumbai), contribute significantly by hosting focused EP meetings and training programs.

The momentum has continued into 2026, with several major meetings already successfully con-ducted. Notable examples include EP Masterclass 2026 (Gurgaon, February 2026), the Indian Complex Arrhythmia Summit (Gurgaon, April 2026), SRM Pacing and Clinical Electrophysiology 2026 (Chennai, March 2026), and The Arrhythmia Summit 2026 (Chennai, March 2026). These high-quality academic events, marked by active international participation, reflect the EP com-munity's commitment to collaborative and continuous learning, offering valuable insights into advanced techniques and evolving clinical practices.

Such meetings foster a vibrant environment for meaningful academic exchange and professional development, with each interaction building upon previous engagements to ensure continuity of learning and the emergence of fresh perspectives. Upcoming events such as ISECON (Jaipur) and the National Physiologic Pacing Symposium (Chennai) are eagerly anticipated. In parallel, women-focused cardiology meetings are gaining momentum, with dedicated EP sessions further enriching inclusivity and representation within the specialty.

Overall, the landscape is rich with opportunities for learning and engagement. Many high-volume centers also run well-structured electrophysiology training programs, where early-career electro-physiologists receive hands-on experience and mentorship, shaping them into highly skilled professionals.

3. IHRS Online Educational Programs

IHRS conducts online EP teaching modules, fellowship-oriented programs, and Allied professional training. Programs like DM/DNB Fellows training and 'How I Do My Case Of' have been running successfully over more than a year. IHRS programs run on the mission to uplift standards of care through technical training and educational programs. Focus areas are Hands-on training, electrogram interpretation and Mapping system familiarization.

Scientific Themes Across Meetings

Both national and regional meetings cover a broad range of EP topics:

1. Arrhythmia Management
    - Supraventricular tachycardia (SVT)
    - Atrial fibrillation (AF)
    - Ventricular tachycardia (VT)
2. Ablation Technologies
    - Radiofrequency ablation
    - Cryoablation
    - Pulsed field ablation (emerging)
3. Device Therapy
    - Pacemakers
    - Implantable cardioverter-defibrillators (ICDs)
    - Cardiac resynchronization therapy (CRT)
4. Advanced Mapping
    - 3D electro anatomical mapping
    - High-density mapping
    - Integration with imaging
5. Emerging Trends
    - Artificial intelligence in EP
    - Remote and robotic ablation
    - Leadless pacing and conduction system pacing

India’s contribution to EP research has grown significantly, with thousands of publications and increasing global visibility.

Conclusion

National electrophysiology meetings in India have played a transformative role in the evolution of the specialty. These forums provide fertile ground for the dissemination of cutting-edge knowledge, the development of technical expertise, the promotion of research and innovation, and meaningful integration with the global electrophysiology community. Regional meetings further complement this ecosystem by ensuring wider access to education and skill development across diverse geographic areas.

Collectively, these academic platforms have not only elevated the standards of arrhythmia care in India but have also positioned Indian electrophysiologists as important contributors to global car-diovascular science. As technology continues to advance and collaborative networks deepen, these forums will remain central to shaping the future of electrophysiology in India.

INTERVIEW: INDIAN WOMEN IN EP

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What inspires the Indian women Cardiologists to pursue a career in Cardiac Electrophysiology?

Cardiac electrophysiology attracts Indian women cardiologists through its unique combination of intellectual depth, procedural precision, and the potential for definitive cure. It integrates anatomy, physiology, technology, and electrical science, offering real-time problem solving and direct patient impact. Rapid advances in ablation, devices, and AI further enhance its appeal.

For women in India, growing training opportunities, mentorship, and increasing representation in EP have made the field more accessible and rewarding, offering a balanced and future-ready subspecialty within cardiology.

How do you see the role of women evolving in electrophysiology in India?

Women electrophysiologists are making an increasingly strong and visible impact in Indian EP. From being underrepresented, they are now helping shape the field through clinical excellence, academic leadership, mentorship, and research. Their contributions in original research and complex case management reflect the vital role they play in both Indian and global EP.

Women in EP are also assuming greater leadership roles. Their growing presence in the executive committee of the Indian Heart Rhythm Society (IHRS), the premier professional body in Indian cardiac electrophysiology, reflects their active role in shaping the future of the specialty in India.

What challenges do women face in this subspecialty?

1) Balancing career progression and personal responsibilities
Choosing electrophysiology as a core specialty often coincides with a defining phase of life, when professional demands intensify while social expectations around family responsibilities also increase. Radiation exposure concerns, particularly during childbearing years, remain an important consideration, especially as many institutions in India still lack no-fluoro or minimal-fluoro technologies. As a result, some women may progress through the field at a different pace, balancing professional aspirations with major personal milestones. The trajectory may differ, but the destination remains the same—professional excellence.

2) Representation and leadership
Building on historically limited representation in leadership roles remains another challenge. Encouragingly, this is changing. More women are assuming leadership positions, while male colleagues are increasingly becoming important allies in a professional environment where women leaders are helping shape the future. Equally important, senior women electrophysiologists are mentoring the next generation, strengthening a culture of support and guidance.

Increasing awareness and evolving support structures are helping women break barriers and advance with excellence in the field.

What changes have helped improve participation of women in EP?

1. **Greater visibility of women faculty** at national and regional conferences, including live cases.

2. **Active engagement on professional and social networks,** allowing women electrophysiologists to showcase their work to regional societies and the wider community.

3.**Supportive institutional and national policies** addressing maternity needs and radiation safety concerns.

4.**Initiatives through societies such as the Indian Heart Rhythm Society and regional working groups,** which promote excellence, help overcome gender bias, and foster a supportive ecosystem.

What is the advice to young women considering EP as a career?

Choosing EP as a career is a significant and potentially life-changing decision. It is a demanding yet deeply rewarding field that often requires balancing personal responsibilities with professional aspirations. That balance may be challenging, but it is certainly achievable with resilience, perseverance, and support.

My advice would be to pursue the field with confidence, recognise that the challenges are real but not insurmountable, and seek mentorship early. With an increasing presence of women electrophysiologists as mentors and role models, guidance at different stages of one's professional journey can be invaluable.

How important are platforms like national conferences and regional meetings?

Platforms such as the annual meetings of Indian Heart Rhythm Society are invaluable, particularly for women in EP, as they provide opportunities to showcase original research and clinical work. With increasing visibility and acceptance in the mainstream academic arena, women electrophysiologists have carved a distinct and meaningful role for themselves.

These platforms offer important avenues for knowledge dissemination, hands-on learning, networking with national and international experts, and professional growth.

What does future hold for women EP in India?

Indian women electrophysiologists are already making significant strides through clinical excellence, intellectual curiosity, and the perseverance needed to navigate the complexities of cardiac electrophysiology. Through collaboration with national and international experts, they are bringing fresh perspectives to real-world challenges.

The professional environment is becoming increasingly inclusive and supportive, while community networking and academic platforms continue to foster inspiration, dialogue, and growth. With these support systems in place, Indian women in EP stand at the cusp of a new era defined by greater opportunity, stronger representation, and growing leadership.

EP LAB SPOTLIGHT: THE RHYTHM OF INNOVATION

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[2]Al-Dabbous Cardiac Center, Adan Hospital, Kuwait (Chief Technologist, Head of Technicians and Radiation Protection Department)

Our electrophysiology (EP) laboratory at Al Dabbous Cardiac Center, Adan Hospital, provides a comprehensive rhythm management service within a high-volume cardiac center in the Ahmadi governorate in southern Kuwait.

Electrophysiology continues to evolve with increasing procedural complexity and the introduction of new technologies. EP laboratories must adopt these advances while ensuring safe integration and consistent patient care.

Facility and Team

Our EP service is supported by one dedicated electrophysiology laboratory for ablation procedures. Additional procedure rooms are used for device implantation, and a hybrid operating room is utilized for lead extraction procedures. Our team includes electrophysiologists, EP technologists, EP nurses, radiology technologists, and anesthesiologists. The outpatient EP team, including cardiologists, nurses, and administrative staff, plays an essential role in patient coordination and continuity of care.

Evolution of the EP program

The EP program was initiated in 2013. As demand increased and technology evolved, the program has expanded in both procedural scope and volume, with continued adoption of newer technologies. The program has experienced an overall procedural volume increase of 46% over the past year. Atrial fibrillation ablation program has evolved significantly with an approximate increase of 70% during the same period.

Procedures Performed

In our EP lab we perform a wide spectrum of electrophysiology procedures, including:

- Catheter ablation procedures for SVT, atrial flutter, atrial fibrillation, and ventricular arrhythmias.
- Complex ventricular arrhythmia ablation, including cases supported by LVAD or ECMO.
- Cardiac implantable electronic devices (CIED) including pacemaker, ICD implantation, CRT implantation (CRT-P and CRT-D), leadless pacemakers.
- Left atrial appendage closure (LAAC) device implantation.
- Lead extraction procedures

Advanced mapping systems including CARTO and EnSite are routinely used for mapping of arrhythmias. Intracardiac echocardiography is utilized for transseptal puncture and guidance during ablation procedures.

New technologies

Pulse Field Ablation
Pulse field ablation (PFA) has been introduced for atrial fibrillation ablation. As a non-thermal myocardial-selective energy source, PFA offers improved safety and efficiency profiles compared with radiofrequency ablation (RFA). Its implementation required team training and workflow adjustments.

Conduction System Pacing
Left bundle branch area pacing (LBBAP) has been incorporated into our device implantation practice. LBBAP is used in selected patients as an alternative to conventional pacing and selected CRT indications.

Training, Education and Quality

New staff members undergo a structured orientation with supervised training, gradual skill development, and competency assessment.

Ongoing education is supported through internal teaching sessions, hands-on workshops, vendor-supported training, and participation in regional and international conferences.

The EP program also participates in clinical research and maintains procedural registries. This enables ongoing assessment of outcomes, and complications. Regular analysis supports quality improvement and service evaluation.

Challenges and Lab Culture

As procedural complexity increases and new technologies are introduced, maintaining efficiency and consistency remains a challenge. These are addressed through protocol development, workflow optimization and regular case review. Clear communication and defined roles help maintain procedural flow during both routine and complex cases.

The lab has also managed complex cases, including ventricular tachycardia ablation performed under mechanical circulatory support (ECMO and LVAD) in collaboration with perfusion and heart failure teams. In addition, selected procedures such as left atrial appendage closure have been performed using intracardiac echocardiography guidance under moderate sedation in high respiratory risk patient.

During a transitional period for maintenance of the main EP laboratory, procedures were temporarily performed in the operating theatre using a portable C-arm, with relocation of mapping and pacing systems. This required workflow adaptation, simulation-based preparation, and establishment of safe patient transfer protocols. This transition was successfully managed through coordinated efforts across the multidisciplinary team.

A supportive team environment is an important part of the lab's function, allowing the team to maintain focus and coordination during long procedures.

Figures

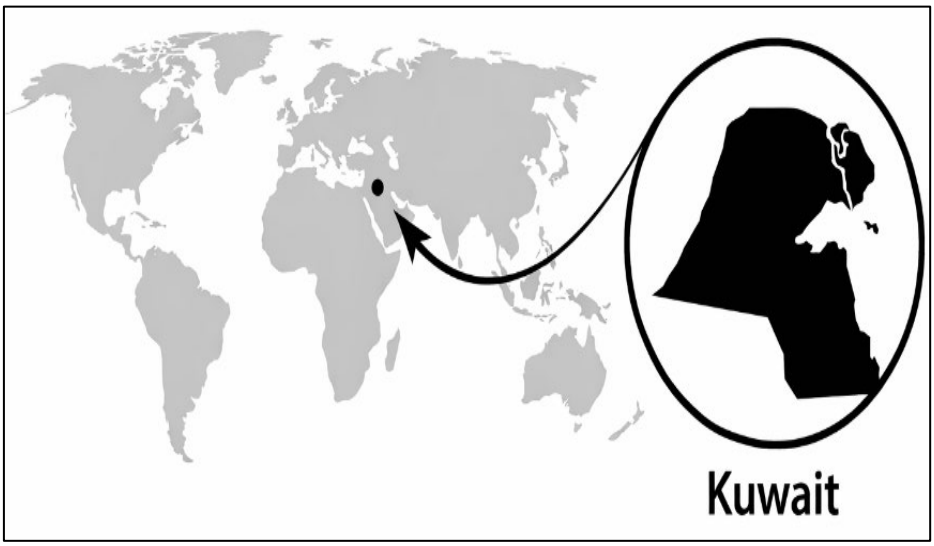


Figure 1. Geographic location of Kuwait within the Middle East

Figure 2. AlDabbous Cardiac Center, Adan Hospital, Kuwait. A well-established tertiary cardiac center managing a high volume of patients.

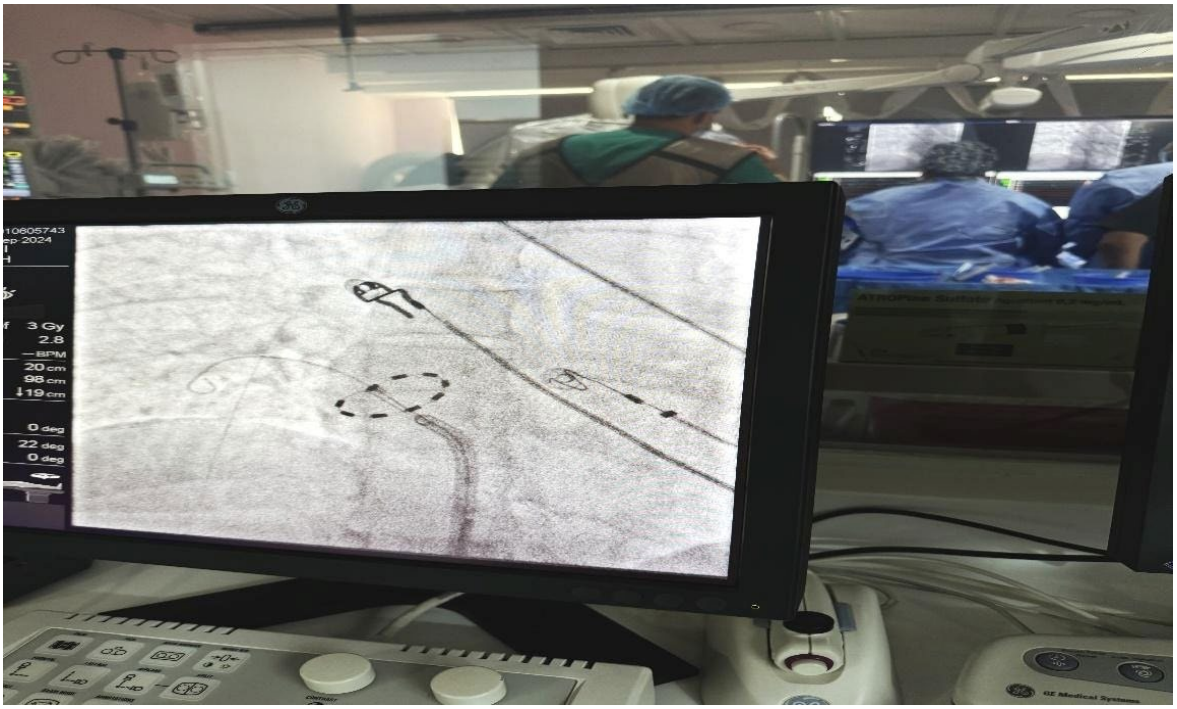


Figure 3. Electrophysiology laboratory setup during a catheter ablation procedure, demonstrating a fluoroscopic image of the pulse select pulse field ablation catheter.

Figure 4. The electrophysiology laboratory team at Al Dabbous Cardiac Center

Figure 5. Outpatient electrophysiology team at Al Dabbous Cardiac Center

GETTING TO KNOW: DR KIHONG LEE

Professor, MD, PhD of Chonnam National University Hospital, Gwangju, Korea
APHRS Web & Arrhythmia News Committee Chair

Why did you choose to enter medicine and above all, prefer to specialize in Electrophysiology?

Enthusiasm to find exact mechanism & treatment according to pathophysiology.

New continents combined to digital health -> new opportunity for research enabling EP to digital health care.

What do you regard as the most significant development in Electrophysiology in the recent past?

AI connecting digital health to health care including both professional and non-professional field.

Can you talk about an accomplishment that you are particularly proud of?

Biological pacemaker made by TBX18 mRNA, published in Nature biomedical engineering, Nat Biomed Eng 2024;8:1124-> The work was performed at Emory university with Prof. Hee Cheol Cho both at pig & rat model. TBX18 mRNA injection at destroyed AV nodal area enabled to beat heart again until one-month without any complication and any immune reaction.

If you could have an alternative career, what would it be and why?

Pilot. Flying a huge aircraft that I control, traveling around the world. Seeing a large airplane soar through the sky under my command makes my heart flutter. It would bring me great joy to transport passengers to their dream destinations, helping them fulfill their own dreams.

What are your hobbies and interests outside of medicine?

Riding a bicycle. Almost every weekend, cycling through rural areas along rivers and farmland helps to heal my exhausted body. As I pedal until I am out of breath, I feel a sense of clarity and renewal in both my mind and heart.

Who has inspired you the most in your life and why?

Prof. Jeong Gwan Cho from South Korea introduced me to electrophysiology (EP). Working with him, I developed a passion for analysing ECGs and understanding their meaning. He also inspired me to connect EP beyond the professional field, even envisioning wearable devices that could monitor ECGs and improve daily life.

What is the funniest thing that has happened to you recently?

Uhm. Not so clear.

What is your best life advice, motto or favorite quote?

Truthfulness is the best preparation.

What advice would you give to your younger self?

Carpe diem! & Be faithful to the present!

If you were a movie character, who would you be and why?

Byung Hun Lee. Thousands of masks.

You're a new addition to the crayon box. What color would you be and why?

Peaceful & wonderful.

How do you keep a healthy work/life balance?

Diligent. Work diligent & rest fully after work.

What are your thoughts about some of the emerging technologies, and the way they will shape the future care of arrhythmia patients?

Prediction is the best form of preparation. In the management of atrial fibrillation (AF), predicting potential triggers is essential. In the general population, anticipating future arrhythmic events, including sudden cardiac arrest and AF, is equally important. Pre-emptive modification of arrhythmic substrates can help improve quality of life.

REPORT ON APHRS IMMERSION PROGRAM AT AUCKLAND CITY HOSPITAL AND WAIKATO HOSPITAL

Written by: Jhobeleen De Leon, MD

The Asia Pacific Heart Rhythm Society Immersion Program in New Zealand was an invaluable experience. The program, conducted from March 2 to March 15, 2026, was held at Auckland City Hospital and Waikato Hospital under the leadership of Dr. Andrew Martin and Dr. Martin Stiles, respectively. It also included participation in the Asia Pacific Heart Rhythm Summit, held on February 28, 2026, at the New Zealand International Convention Centre. The summit covered a wide range of topics relevant to electrophysiology, including current practices and strategies for improving patient outcomes.

This immersive experience significantly broadened my understanding of electrophysiology procedures. I was exposed to a spectrum of cases, ranging from routine to highly complex interventions. In particular, I greatly valued the opportunity to deepen my knowledge of ablation procedures, including pediatric cases under the guidance of Dr. Linda Koutbi. Among these were an atrial tachycardia localized to the right atrial appendage and an atrioventricular reentrant tachycardia managed using a Freezor catheter for slow pathway ablation.

Another noteworthy case, managed with Dr. Andy Gavin, involved a non–right ventricular outflow tract premature ventricular complex localized to the left ventricular summit. Various approaches were attempted, including ablation within the right ventricular outflow tract, which resulted in only transient suppression of the PVCs. Additional attempts were made in the aortic cusp and coronary sinus; however, it was ultimately determined that ethanol ablation would be more appropriate in a different setting.

A particularly notable experience was observing pulsed field ablation procedures performed by Drs. Andy Gavin, Andrew Martin, Nigel Lever, and Martin Stiles using two different systems: Farapulse (Boston Scientific) and PulseSelect (Medtronic). These emerging technologies in atrial fibrillation ablation have demonstrated advantages in reducing procedural duration and minimizing complications and collateral damage. As pulsed-field ablation is not yet available in the Philippines, one of my key objectives was to gain insight into these systems and to evaluate their potential application in our local setting.

I also gained valuable experience from a redo atrial fibrillation and atrial flutter ablation case with Dr. Allan Plant, during which a vein of Marshall ethanol infusion was considered. This was my first exposure to this technique and added significantly to my procedural knowledge.

Another enriching aspect of the program was the opportunity to observe lead extraction procedures and subcutaneous implantable cardioverter-defibrillator (S-ICD) implantation under the supervision of Drs. Andrew Martin and Nigel Lever. One case involved an infected pacemaker system complicated by endocarditis, requiring lead extraction with aspiration of vegetations. Another case involved a young male with long QT syndrome, previously implanted with a dual-chamber ICD and dual-coil right ventricular lead, who presented with lead failure. Lead extraction was performed, followed by successful implantation of a subcutaneous ICD. These cases provided important insights into various lead extraction strategies, including the use of specialized tools and equipment, and highlighted the critical importance of a multidisciplinary approach involving thoracocardiovascular surgeons, anaesthesiologists, nursing staff, and electrophysiologists. This experience was particularly meaningful to me, as I am actively involved in establishing a lead extraction program in my home country.

Furthermore, I had the opportunity to observe the complete process of subcutaneous ICD implantation, from preoperative preparation and implantation technique to defibrillation threshold testing and postoperative management. While I had previously assisted in similar procedures during my training in Singapore, access to this device in the Philippines remains limited to compassionate use. This experience is especially timely, as our team is scheduled to perform a subcutaneous ICD implantation in April, which may be among the first in the country.

Overall, the procedures I observed enhanced my knowledge and expanded my perspective on electrophysiology, equipping me with skills essential for advancing my clinical practice. The immersion program has been highly beneficial in numerous respects. It broadened my professional outlook by enabling me to collaborate with and build relationships among electrophysiology specialists, surgeons, and other healthcare professionals. It also provided exposure to advanced techniques and their practical applications, as well as insight into how well-coordinated teams and structured protocols can optimize patient safety and outcomes.

I would like to express my gratitude to the Asia-Pacific Heart Rhythm Society for giving me this great opportunity. I would like to acknowledge also Drs. Andrew Martin, Khang-Li Looi, Nigel Lever, Andy Gavin, Matthew O'Connor, Linda Koutbi, and Ms. Priya Samarasinghe of Auckland City Hospital, and Drs. Martin Stiles, Elizabeth Woollard, Allan Plant, Nisha Estrada, and Ms. Nicky Cockrem of Waikato Hospital, and all the hospital staff and nurses, for graciously accommodating me. The knowledge and experience I gained from this program will undoubtedly strengthen my capacity to provide high-quality care to patients in my home country, the Philippines.

Figure 1. APHRS Summit 2026

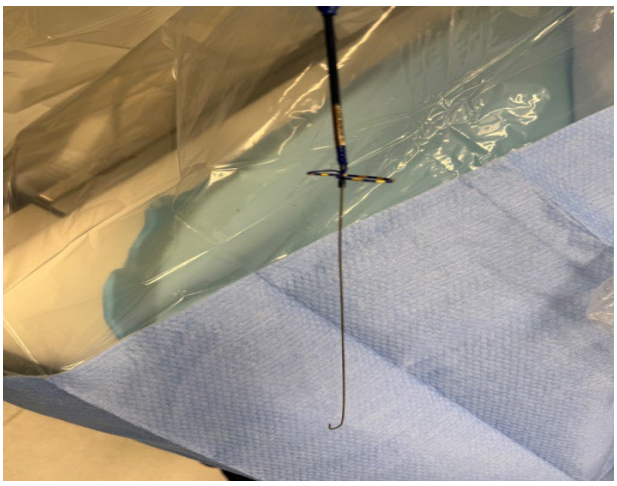


Figure 2. PulseSelect Catheter

Figure 3. FaraPulse

Figure 4. Vein of Marshall

Figure 5. With Dr. Martin Stiles

Figure 6. With Dr. Elizabeth Woollard

Figure 7. With Drs. Nigel Lever and Andrew Martin

Figure 8. Aspirated Vegetations

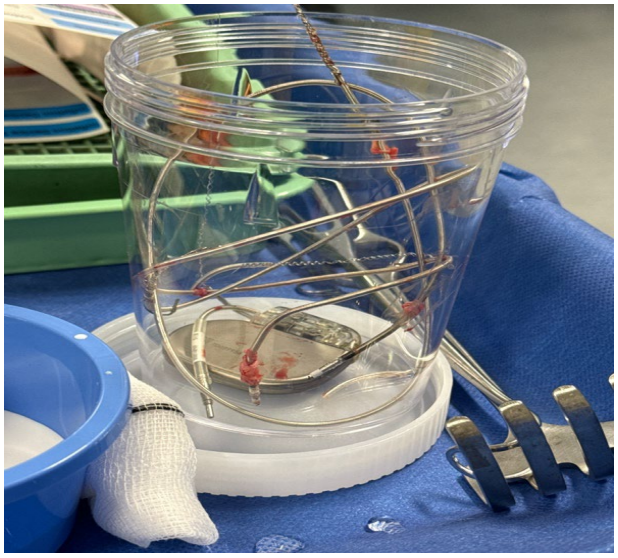


Figure 9. Extracted infected pacemaker system

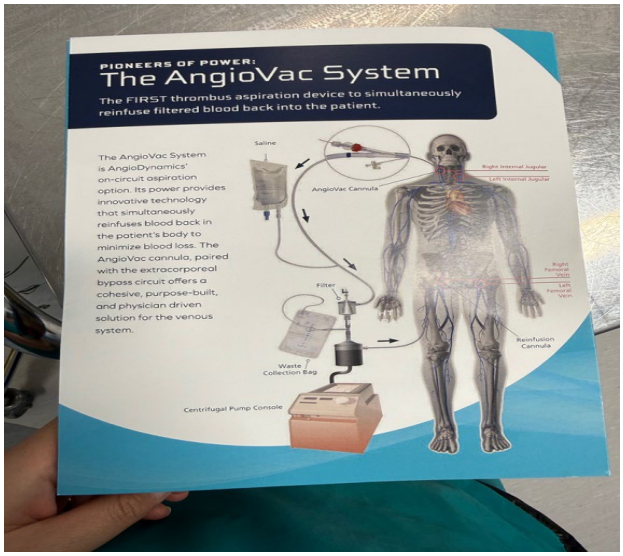


Figure 10. System used for the aspiration of vegetations

Figure 11. Cook Evolution with the extracted lead.

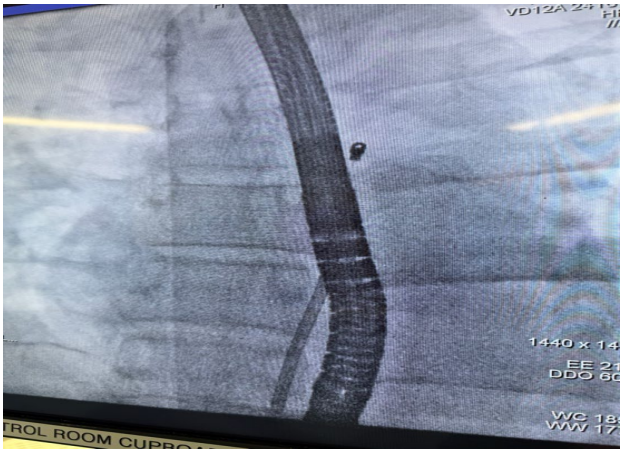


Figure 12. Subcutaneous ICD implantation

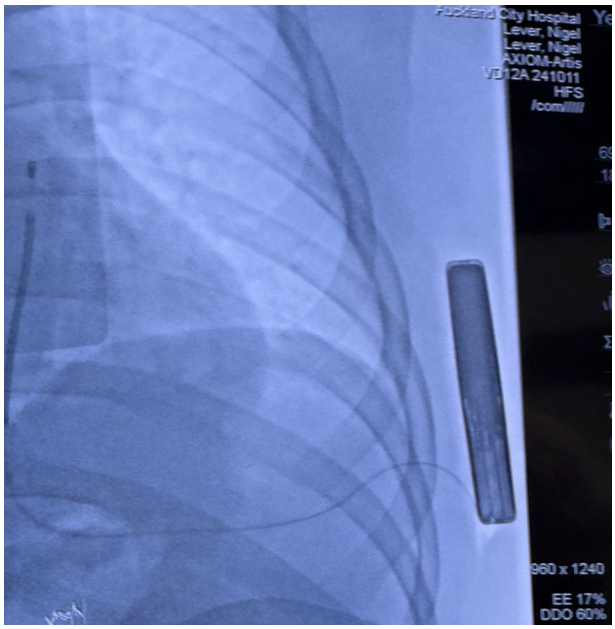


Figure 13. Subcutaneous ICD implantation

Boston Scientific

FARAPULSE™
PFA Platform

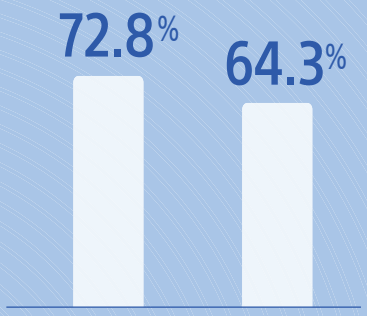
AF Symposium 2026 Clinical Data Highlights

ADVENT long-term outcomes study[1]

Positive 4-year long-term outcomes

4 years

Effectiveness* at 4 years



*Freedom from recurrence, cardioversion, or repeat ablation after 3-month blanking period

DISRUPT-AF[2] all-comer real-world registry data

Safe, efficient single-catheter map and ablate workflow*

0.2% catheter-related complication rate (n=477)

3.8 min average fluoro time

*FARAWAVE™ NAV PFA Catheter

ADVANTAGE AF CTI sub-analysis[3]

FARAPOINT™ PFA Catheter vs RFA for CTI ablation

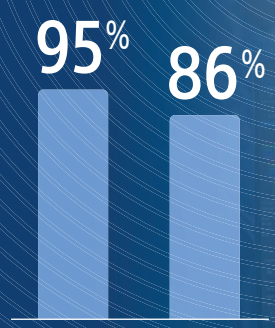
FARAPOINT PFA (n=141)

RFA (n=50)

Significantly shorter CTI ablation time (p = 0.001) with FARAPOINT PFA Catheter vs RFA with similar safety and efficacy outcomes

NAVIGATE-PF[4]

Chronic lesion durability*



60-day lesion durability

*FARAWAVE™ NAV PFA Catheter

DISRUPT-AF[5] real-world registry

Concomitant FARAPULSE PFA + LAAC

0.7% Acute safety* event rate (n=284)

*time of discharge/24 hours

Advancing PFA. Leading with data.

1.Reddy, V. Y. (2026). Pulsed field versus conventional thermal ablation for paroxysmal atrial fibrillation: 4-year outcomes in the ADVENT-LTO study. *Nature Medicine*. https://doi.org/10.1038/s41591-026-04246-4
2.Nair, D., et al. (2026) Clinical experience with map-and-ablate workflows enabled by the second-generation catheter: findings from the DISRUPT-AF Registry. Presented at AF Symposium 2026.
3.Gerstenfeld, E. P., et al. (2026). Pulsed field ablation vs standard radiofrequency ablation for typical atrial flutter: A sub-study across phases 1 & 2 of the pivotal ADVANTAGE AF Trial. Presented at AF Symposium 2026).
4.Reddy, V. Y., et al. (2026). Chronic lesion prediction of pulsed field ablation using dynamic shape visualization and tags with the second-generation pentaspline catheter. Presented at AF Symposium 2026.
5.Al-Ahmad, A., et al. (2026). Safety of concomitant pulsed field ablation and left atrial appendage closure using a pentaspline catheter. Presented at AF Symposium 2026.

WATCHMAN™
INTEGRATED LAAC SOLUTIONS

Boston Scientific
Advancing science for life™

CHAMPION-AF Clinical Trial Results

WATCHMAN met all 3-year endpoints as a first-line option vs. NOACs in a broad NVAF population

The CHAMPION-AF clinical trial is the first and largest randomized controlled trial comparing the WATCHMAN FLX™ LAAC Device to NOACs as a first-line option for stroke risk reduction in a broad population of patients with non-valvular atrial fibrillation (NVAF), including those who are at low-to-moderate risk of bleeding from the use of anticoagulation.

View publication in the New England Journal of Medicine[1]

Non-inferior Efficacy

Superior Bleeding Reduction

141 Centers Globally

3,000 Patients Randomized 1:1

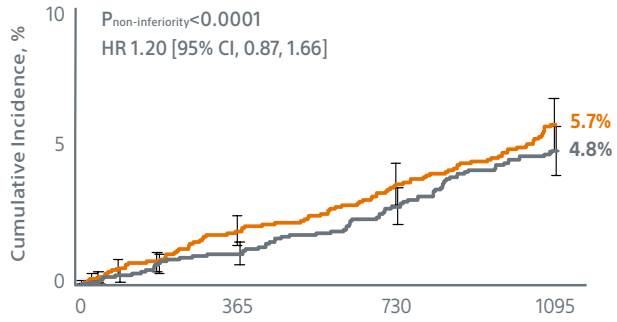
WATCHMAN FLX (N=1,499 ITT)

NOACs (N=1,501 ITT)

Primary Efficacy Endpoint Met

WATCHMAN FLX demonstrated statistical non-inferiority to NOACs for the occurrence of cardiovascular (CV) death (hemorrhagic and/or unexplained death), stroke (ischemic and/or hemorrhagic), and systemic embolism (5.7% vs. 4.8%; $P_{non\text{-}inferiority}$ <0.0001)

Primary Efficacy: CV Death, Stroke, Systemic Embolism

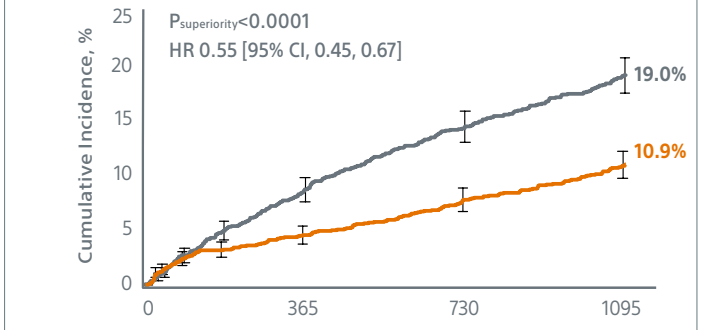


No. at Risk				
WATCHMAN FLX	1499	1430	1395	1326
NOAC	1501	1394	1344	1254

Primary Safety Endpoint Met

WATCHMAN FLX demonstrated statistical superiority to NOACs for the occurrence of ISTH non-procedural major bleeding and modified* clinically relevant non-major bleeding (10.9% vs. 19.0%; $P_{superiority}$ <0.0001)

Primary Safety: ISTH Non-procedural Bleeding



No. at Risk				
WATCHMAN FLX	1499	1392	1349	1252
NOAC	1501	1330	1236	1093

*Modified ISTH clinically relevant non-major bleeding was defined as any sign or symptom of hemorrhage (e.g., more bleeding than would be expected for a clinical circumstance, including bleeding found by imaging alone) that does not fit the criteria for the ISTH definition of major bleeding but does meet at least one of the following criteria.
- Requiring medical intervention by a healthcare professional
- Leading to hospitalization or increased level of care (e.g., ER visit, diagnostic procedures, medication change)

34%▼ Reaffirming superiority of the primary safety endpoint, WATCHMAN FLX demonstrated a **statistically significant 34% risk reduction in ISTH bleeding (including procedural)** at 36 months (12.8% vs. 19.0% (HR 0.66 [0.54, 0.80]); P<0.0001).

1.1% Annualized Ischemic Stroke Rate

Superior Net Clinical Benefit*

*Net clinical benefit endpoint includes a composite of cardiovascular death, stroke, systemic embolism, and non-procedural ISTH major and modified clinically-relevant non-major bleeding

1. Doshi SK, Kar S, Nair D, Waggoner T, Agarwal H, Moussavian M, al. Left atrial appendage closure or anticoagulation for atrial fibrillation. N Engl J Med. 2026; 384 1270 1280.

WATCHMAN FLX is an FDA approved device being studied for an expanded indication as a first line therapy vs NOAC for NVAF patients. The use of WATCHMAN or WATCHMAN FLX as a first-line therapy for stroke risk reduction in NVAF patients is considered investigational. **Caution:** Investigational Device. This product is not approved for supply in Singapore. Products shown for INFORMATION purposes only and may not be approved or for sale in certain countries. Results from clinical investigation is not necessarily predictive of results in other studies. Results in other studies may vary.

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APHRS 2026 BUSAN

19th Asia Pacific Heart Rhythm Society Scientific Session in conjunction with KHRS 2026

21 – 24 October 2026
Bexco, Busan, Korea

Key Dates

Abstract · Case · BoB Submission Deadline	Early-bird Registration Deadline	Hotel Reservations Deadline
18 June (Thu.)	30 July (Thu.)	22 September (Tue.)

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