


ELECTROPHYSIOLOGY



ADVANCES IN IMPLANTED ELECTRICAL DEVICES

- 1958** First pacemaker implanted, marking the beginning of pacing therapy
- 1980** First successful implantable cardioverter-defibrillator (ICD) in a human by Dr. Michel Mirowski
- 1984** First-ever ACC/AHA clinical practice guideline addresses cardiac pacemakers
- 2001** Cardiac Resynchronization Therapy (CRT) approved by the FDA
- 2013** Physiologic pacing evolves as a preferred approach to avoid pacing-induced cardiomyopathy
- 2016** First leadless pacemaker approved, offering a minimally invasive alternative to traditional pacemakers

ADVANCES IN ECGS

- 1924** Dr. Willem Einthoven awarded the Nobel Prize in Physiology or Medicine for inventing the first electrocardiograph (ECG) 
- 1970s** ECG machines are coded to generate diagnostic reports as a clinical aid
- 2020s** Innovations like artificial intelligence and wearable technologies hold potential for optimizing ECG data collection and diagnostics



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STROKE PREVENTION AND ATRIAL FIBRILLATION

1954 Warfarin, a vitamin K antagonist, is approved for use in the US, becoming the only long-term oral anticoagulation therapy for patients with atrial fibrillation (AFib) until 2010

2010-2014

Novel oral anticoagulants (NOACs) – dabigatran, rivaroxaban, apixaban, and edoxaban – make their debut, providing alternatives to warfarin

2019

ACC/AHA/HRS focused guideline update recommends direct oral anticoagulants, formerly NOACs, as the preferred alternative to warfarin for reducing stroke risk. Scan the QR code for the latest AFib clinical guideline from 2023



2021

Left Atrial Appendage Closure (LAAO) approved for stroke risk reduction in patients with nonvalvular AFib

SURGICAL ABLATION

1987

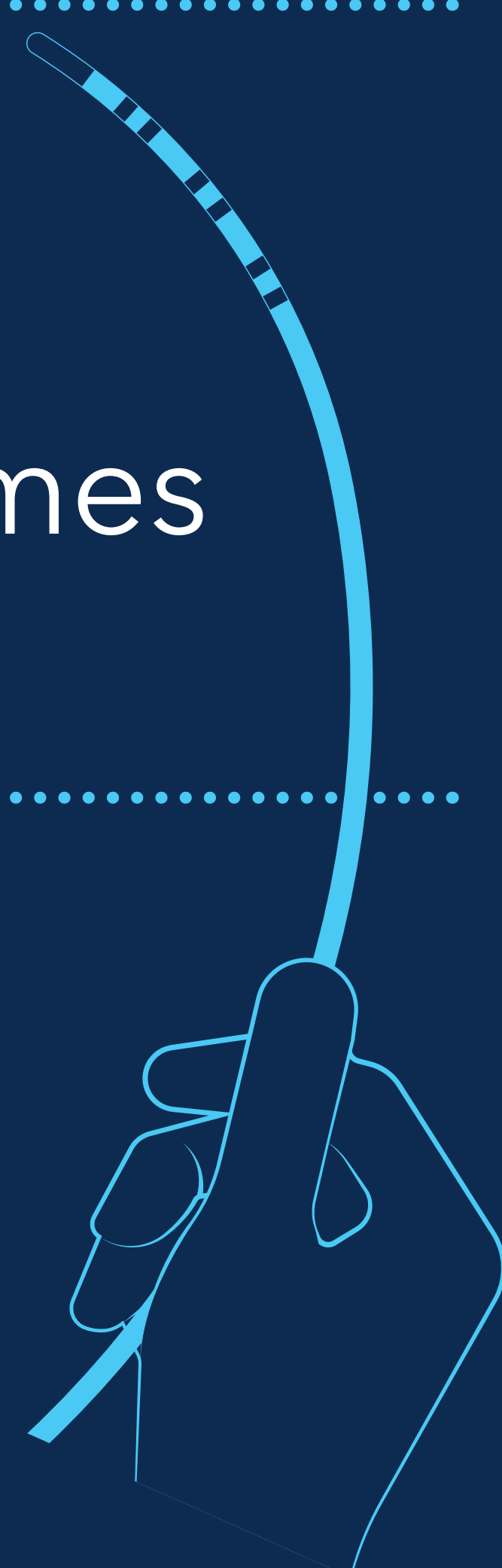
First "Maze" procedure performed

1990s

Minimally invasive surgical techniques are adopted, reducing patient recovery times and risks

2010s

Advancements in imaging and mapping technologies enhance the precision of ablation procedures



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CATHETER-BASED THERAPY

1981 First catheter ablation of an arrhythmia

Late 1990s

Studies find ectopic activity in the pulmonary veins (PVs) may be responsible for triggering AFib. Radiofrequency ablation, first introduced in 1987, emerges as treatment option



1998 3D electroanatomic mapping, significantly improves safety of catheter ablation

2010 Cryoballoon Ablation receives FDA approval



2023 Pulsed Field Ablation (PFA) receives FDA approval, providing a non-thermal, highly selective ablation method that reduces damage to surrounding tissues



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CPR TRAINING AND AEDS



1947 First successful use of an external defibrillator on an a patient

1960 Cardiopulmonary resuscitation (CPR) debuts

1970s First AED designed for public use developed

2008 Hands-only CPR is introduced

2020s Support for health policies mandating CPR training and AED access continues to grow



GENETIC BASIS OF CARDIAC ARRHYTHMIAS

Recognition of genetic markers for syndromes such as Long QT Syndrome and Brugada Syndrome in the **mid- to late-1990s** has led to treatment of patients without structural heart disease who are at risk for sudden death



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