ABSTRACTS
NVVC Najaarscongres 2025
Donderdag 6 november
09.00 – 10.30 uur

SESSIE 1: EFO & devices

	Zaal 8/9	Voorzitters: dr. Pascal van Dessel, cardioloog MST, Agniezska Smoczynska, AIOS UMC Utrecht
1	09.00 - 09.10	**Stroke and Transient Ischemic Attack Recurrence after PFO Closure in Patients with Cryptogenic Embolism** *M.W. Kanon (Deventer Ziekenhuis, Deventer)*
2	09.11 - 09.21	**Impact of Electrode Size on Unipolar and Omnipolar Voltage Mapping in Pediatric and Adult Atria: Does Size Matter?** *M.S. van Schie (Erasmus MC, Rotterdam)*
3	09.22 - 09.32	**Ventricular Arrhythmia Recurrences and Device Related Complications in Idiopathic Ventricular Fibrillation Patients with a Subcutaneous ICD Compared with a Transvenous ICD** *R. Roodenburg (UMC Utrecht, Utrecht))*
4	09.33 - 09.43	**Differences in Atrial Substrate in Bicuspid and Tricuspid Aortic Valve Patients** *N.L.M. de Kruijf (Erasmus MC, Rotterdam)*
5	09.44 - 09.54	**First In-Human Mapping of Bachmann's Bundle during Atrial Fibrillation** *A.I. Freriks (Erasmus MC, Rotterdam)*
6	09.55 - 10.05	**Restrictive Dutch Sports Advice in Pacemaker and ICD Patients** *P.B. Elias (Amsterdam UMC)*
7	10.06 - 10.16	**Oral Anticoagulants in Acute Coronary Syndrome with Atrial Fibrillation: a Head-to-Head Comparison** *W.W. van der Maten (Amsterdam UMC, Amsterdam)*
8	10.17 - 10.27	**First Experience with Leadless AAI(R) Pacing in the Netherlands** *A.A.C. Velraeds (Amsterdam UMC, Amsterdam)*

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Session 1: EFO & devices
Abstract 1

Stroke and Transient Ischemic Attack Recurrence after PFO Closure in Patients with Cryptogenic Embolism

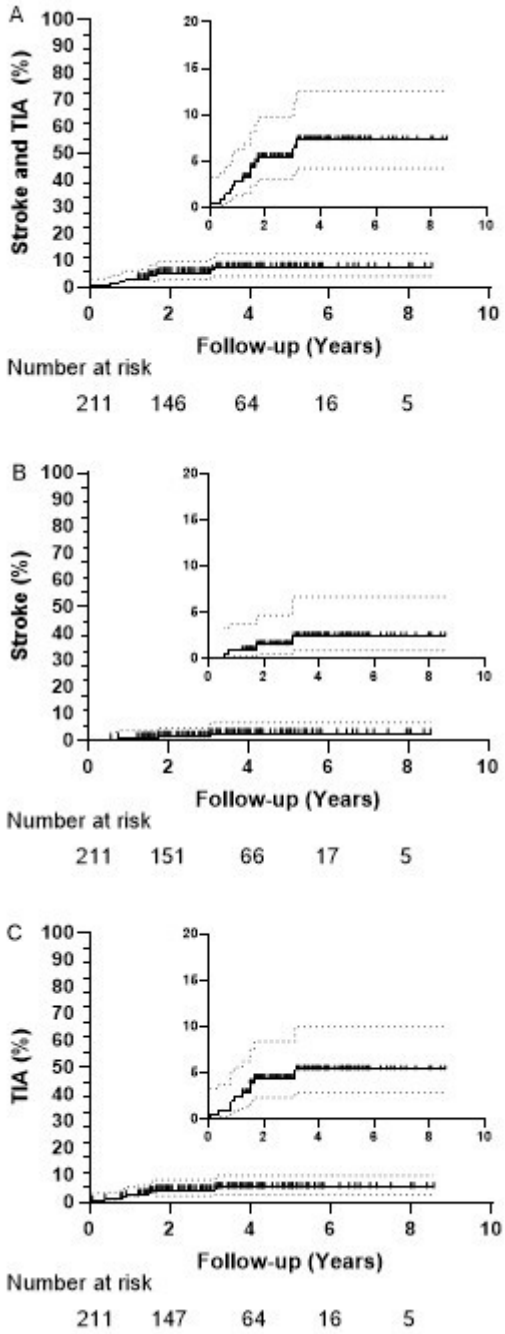
Presenting author: M.W. Kanon
Department: Cardiology

M.W. Kanon (Deventer Ziekenhuis, Deventer); M.W. Kanon (Deventer Ziekenhuis, Deventer); E.S. Hoendermis (UMC Groningen, Groningen); E.A. Bading (Deventer Ziekenhuis, Deventer); J. van Wijngaarden (Deventer Ziekenhuis, Deventer)

Purpose:
Patent foramen ovale (PFO) closure is recommended in selected patients with a cryptogenic stroke and a PFO, as multiple randomized controlled trials (RCTs) have shown superiority of PFO closure over medical therapy in reducing recurrent stroke risk. However, follow-up data outside clinical trials remains scarce. The aim of this study is to evaluate the stroke/transient ischemic attack (TIA) recurrence after PFO closure.
Methods:
Data from 242 patients who underwent PFO closure at the University Medical Centre Groningen (UMCG) between February 2016 and June 2023, because of a cryptogenic stroke, TIA or peripheral embolism, were collected.
Results:
During a median follow-up of 3.1 years (IQR: 1.9-4.3), a total of 5 strokes (0.70 per 100 person-years) and 11 TIAs (1.54 per 100 person-years) were documented. In patients with a recurrent neurological event, hypertension was more prevalent (30.8% vs. 9.6%, p = 0.040). Atrial fibrillation (AF) or atrial flutter was seen in 5.7% of the patients. Other adverse events were rare.
Conclusion:
In this study, the rate of recurrent stroke/TIA after PFO closure was low, but higher than reported in previous studies. These elevated values are primarily due to the higher risk of recurrent TIA, as the recurrent stroke risk in our cohort is comparable to that reported in RCTs. Hypertension was significantly associated with the recurrence of a stroke/TIA.

Keywords:
Ischemic Stroke, Patent Foramen Ovale

Figure:
Figure 1. Kaplan-Meier curves showing the A) combined risk of stroke and TIA; B) risk of stroke; and C) risk of TIA during follow-up. N = 211, TIA = transient ischemic attack



Session 1: EFO & devices
Abstract 2

Impact of Electrode Size on Unipolar and Omnipolar Voltage Mapping in Pediatric and Adult Atria: Does Size Matter?

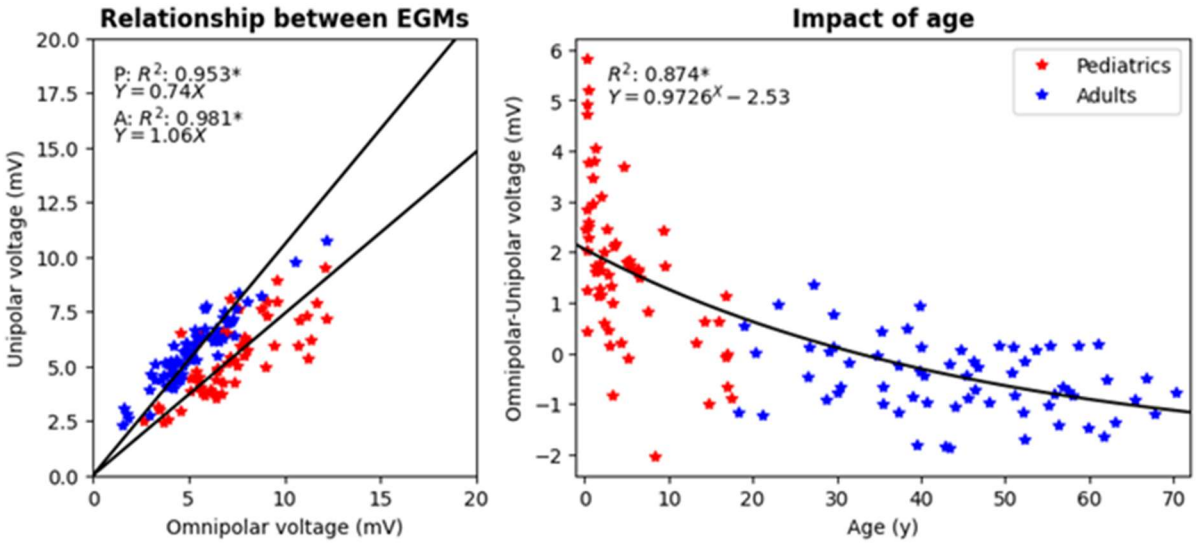
Presenting author: M.S. van Schie
Department: Cardiology

M.S. van Schie (Erasmus MC, Rotterdam); P. Knops (Erasmus MC, Rotterdam); M.H.C. Linderhof (Erasmus MC, Rotterdam); N.L. Ramdat Misier (Erasmus MC, Rotterdam); V. Yildirim (Erasmus MC, Rotterdam); Y.J.H.J. Taverne (Erasmus MC, Rotterdam); N.M.S. de Groot (Erasmus MC, Rotterdam)

Purpose:
Voltage mapping is frequently used during electrophysiological studies to identify arrhythmogenic substrates underlying arrhythmias in pediatric and adult patients with congenital heart disease. In daily clinic, bipolar electrograms are most commonly used, although omnipolar electrograms can be used to overcome directional influences affecting the bipolar peak-to-peak voltage. Unipolar electrograms are also directional independent, although they are influenced by the amount of cardiac tissue underneath the recording electrodes. It remains unknown whether these types of electrograms are influenced by the different cardiac sizes in pediatric and adult patients.
Methods:
Intraoperative bi-atrial epicardial mapping was performed in 59 pediatric and 65 adult patients (2.8[1.0-6.4]vs44[35-55]years). Unipolar electrograms were recorded from which omnipolar electrograms were constructed using two orthogonal electrode pairs. On average 5,231±2,229 unipolar and 15,574±7,633 omnipolar potentials were included from pediatrics compared to 8,762±2,903 unipolar and 28,647±9,532 omnipolar potentials from adults.
Results:
In adults, bi-atrial unipolar voltages were larger than omnipolar voltages (5.5[4.7-6.6]vs4.9[4.0-6.5]mV,P<0.001), while in pediatrics omnipolar voltages were larger than unipolar voltages (5.3[4.2-6.6]vs6.8[5.5-8.4]mV,P<0.001). In both groups, median unipolar voltages linearly correlated with median omnipolar voltages (adults:R2=0.981,pediatrics:R2=0.953). Unipolar voltages were comparable between pediatrics and adults (P=0.418), while omnipolar voltages were larger in pediatrics (P<0.001). For the entire population, there was a strong inverse exponential relationship between age and the difference of omnipolar and unipolar voltages (R2=0.874).
Conclusion:
The smaller cardiac size relative to the interelectrode distance in pediatrics most likely influenced the omnipolar potential voltages, resulting in larger voltages as compared to adults. Usage of this technique for voltage mapping should therefore be with caution and specific pediatric voltage cut-offs should be considered.

Keywords:
Electrophysiological mapping, Congenital heart disease, Mapping techniques

Figure:
The left panel shows the relationship between omnipolar and unipolar voltage for both pediatric and adult patients. The right panel shows the relationship between the difference of omnipolar and unipolar voltage and age of the patient.



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Session 1: EFO & devices
Abstract 3

Ventricular Arrhythmia Recurrences and Device Related Complications in Idiopathic Ventricular Fibrillation Patients with a Subcutaneous ICD Compared with a Transvenous ICD

Presenting author: R. Roodenburg
Department: Cardiology

R. Roodenburg (UMC Utrecht, Utrecht); R. Roodenburg (UMC Utrecht, Utrecht); L.M. Verheul (UMC Utrecht, Utrecht); W.F. Hoeksema (Amsterdam UMC, Amsterdam); R. Evertz (Radboudumc, Nijmegen); J.C. Balt (St. Antonius Ziekenhuis, Nieuwegein); S.C. Yap (Erasmus MC, Rotterdam); M. Alings (Amphia ziekenhuis, Breda); G.F. Kapel (MST, Enschede); B.A. Mulder (UMCG, Groningen); P.H. van der Voort (Catharina Ziekenhuis, Eindhoven); P.G.A. Volders (MUMC+, Maastricht); P.G. Postema (Amsterdam UMC, Amsterdam); A.A.M. Wilde (Amsterdam UMC, Amsterdam); M. Meine (UMC Utrecht, Utrecht); R.J. Hassink (UMC Utrecht, Utrecht)

Purpose:
To prevent sudden cardiac death (SCD) in patients that suffered from idiopathic ventricular fibrillation (IVF), implantable cardioverter defibrillator (ICD) is currently the only treatment. Only certain IVF patients develop recurrence(s) of ventricular arrhythmia (VA), but risk stratification remains difficult. Transvenous ICD (TV-ICD) carries a high complication risk. The subcutaneous ICD (S-ICD) may offer advantages, particularly in young IVF patients. We analyzed VA recurrence and possible predictors and compared complications of S-ICD and TV-ICD in IVF patients.
Methods:
Patients were included from the Dutch IVF registry. For ICD subanalysis, patients were included when ICD was implanted between 2010-2025. First, appropriate therapy (shock/ATP) and possible predictors were analyzed. In subanalysis, device related complications, appropriate and inappropriate therapy were compared between S-ICD and TV-ICD.
Results:
Of 415 included IVF patients (Table 1: Baseline characteristics), 132 (31.8%) experienced recurrent VA requiring ICD therapy. VA recurrence was associated with any symptoms before index event, family history of SCD and DPP6-risk-haplotype. Subanalysis of 261 patients showed no significant difference in appropriate therapy (S-ICD 18.6%; TV-ICD 28.0%, P=0.078) and inappropriate shocks (S-ICD 12.7%; TV-ICD 12.6%, P=0.976) between S-ICD and TV-ICD. TV-ICD patients had more lead complications (S-ICD 1.7%; TV-ICD 13.3%, P<0.001).
Conclusion:
VA recurrence occurs frequently, affecting nearly one-third of IVF patients and is associated with prior symptoms, family history and DPP6-risk-haplotype. In IVF patients, S-ICD and TV-ICD show similar appropriate and inappropriate shocks, but lead complications are more prevalent with TV-ICD. These results suggest that S-ICD represents a more favorable alternative to TV-ICD for the treatment of IVF patients.

Keywords:
Idiopathic Ventricular Fibrillation, Subcutaneous ICD, Recurrent Ventricular Arrhythmia

Figure:
Table 1: Baseline characteristics of 415 IVF patients. The characteristics of the S-ICD group and TV-ICD group are compared and P-value is displayed in the last column. Categorical variables are given as number (percentage) and continuous variables are given as median [interquartile range].

	All	**Subgroup ICD**			
		Total	S-ICD	TV-ICD	P-value
N	415	261	118 (45.2%)	143 (54.8%)	
Male	253 (61.0%)	168/261 (64.4%)	81/118 (68.6%)	87/143 (60.8%)	0.190
Age at first event (years)	40 [29-52]	40 [29-52]	34 [25-47]	47 [32-57]	**<0.001**
Follow-up duration (months)	104 [53-172]	77 [37-115]	63 [31-93]	92 [43-125]	**0.002**
Family history of SCD	68/409 (16.6%)	42/258 (16.3%)	20/118 (16.9%)	22/140 (15.7%)	0.789
Symptoms before index event	157/394 (39.8%)	96/253 (37.6%)	44/111 (39.6%)	52/142 (36.6%)	0.623
DPP6-risk-haplotype	40/413 (9.7%)	16/261 (6.1%)	9/118 (7.6%)	7/143 (4.9%)	0.360

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Session 1: EFO & devices
Abstract 4

Differences in Atrial Substrate in Bicuspid and Tricuspid Aortic Valve Patients

Presenting author: N.L.M. de Kruijf
Department: Translational Electrophysiology & Cardiometabolic Epidemiology

N.L.M. de Kruijf (Erasmus MC, Rotterdam); N.L.M. de Kruijf (Erasmus MC, Rotterdam); M.H.C. Linderhof (Erasmus MC, Rotterdam); M.S. van Schie (Erasmus MC, Rotterdam); Y.J.H.J. Taverne (Erasmus MC, Rotterdam); M. Kavousi (Erasmus MC, Rotterdam); N.M.S. de Groot (Erasmus MC, Rotterdam)

Purpose:
Postoperative atrial fibrillation (PoAF) is one of the most common complications after cardiac surgery. Patients with congenital bicuspid aortic valves (BAV) often require aortic valve surgery at a younger age than tricuspid aortic valve (TAV) patients. While pre-existing atrial substrate plays a critical role in development of PoAF, the exact differences between BAV and TAV are unknown. This study aimed to investigate differences in pre-existing substrates of BAV and TAV patients and development of early (≤5 days) de novo PoAF.
Methods:
We included adult patients without a history of AF with either BAV (N=49) or TAV (N=46), undergoing isolated aortic valve replacement or combined with aortic surgery. Intraoperative high-density epicardial mapping of the atria was performed during sinus rhythm to assess unipolar potential voltages, conduction velocity (CV), conduction delay (CD), and conduction block.
Results:
BAV patients were significantly younger than TAV patients (59 years vs. 68 years; p<0.001). BAV patients had more low-voltage areas (LVA) at the left atrium (LA) (BAV:7.90[4.39-14.88]% versus TAV:2.74[0.51-7.43]%;p=0.003) and showed more CD in the posterior wall of LA compared to TAV patients (BAV:3.73[1.84-4.11]% versus TAV:1.80[1.21-2.95]%;p=0.010). Additionally, the BAV group had a higher variation in CV range from p5-p95 at LA compared to the TAV group (BAV:150.48[142.76-160.38]cm/s versus TAV:143.39[138.71-150.28]cm/s; p=0.017). Other parameters at other locations did not differ significantly. PoAF occurred in 20(41%) BAV patients and 16(35%) TAV patients (p=0.693).
Conclusion:
Despite being nearly a decade younger, congenital BAV patients had larger LVAs and more CD at LA, indicating a more extensive arrhythmogenic substrate at a younger age.

Keywords:
Congenital heart disease, Atrial fibrillation, Epicardial mapping

Session 1: EFO & devices
Abstract 5

First In-Human Mapping of Bachmann's Bundle during Atrial Fibrillation

Presenting author: A.I. Freriks
Department: Cardiology

A.I. Freriks (Erasmus MC, Rotterdam); A.I. Freriks (Erasmus MC, Rotterdam); N.L.M. de Kruijf (Erasmus MC, Rotterdam); M.S. van Schie (Erasmus MC, Rotterdam); V. Yildirim (Erasmus MC, Rotterdam); M.M. de Boer (Erasmus MC, Rotterdam); P. Knops (Erasmus MC, Rotterdam); F.B.S. Oei (Erasmus MC, Rotterdam); Y.J.H.J. Taverne (Erasmus MC, Rotterdam); H. Ramanna (HagaZiekenhuis, Den Haag); N.M.S. de Groot (Erasmus MC, Rotterdam)

Purpose:
The parallel fiber arrangement of Bachmann's bundle (BB) may make this structure more susceptible to remodeling. Despite its central role in interatrial conduction, it has never been investigated to which degree BB is involved in remodeling in atrial fibrillation (AF) patients. Therefore, the aim of this study was to investigate the severity of BB remodeling in patients with different AF types.
Methods:
Intraoperative epicardial mapping (192 electrodes; interelectrode distances: 2mm) at BB during 10s of AF in patients with induced AF without AF history (no-AF group, n=30), paroxysmal AF (PAF, n=12), and persistent AF (PeAF, n=20). For each patient, the amount of conduction block (CB) and fractionated potentials, median cycle length (CL) and median potential voltages were calculated for BB in total and the left (LBB), middle (MBB), and right (RBB) part separately.
Results:
Mapping data are summarized in Table 1. Median CL at BB was shorter during PeAF compared to no-AF (AFCL:171ms [157-183] vs 199ms [180-251];p<0.001); AFCL gradients were not observed in AF patients. MBB showed the highest amount of fractionated potentials in AF patients, there was only a significant difference at MBB in the PeAF group (24.6% [17.9-33.2]) compared to the no-AF group (9.6% [7.0-14.1];p<0.001). Median potential voltages were lower in all regions for the PeAF group (0.8mV [0.6-1.0]) compared to the no-AF group (1.5mV [1.2-1.9];p<0.001) and lower at LBB compared to PAF patients (0.6mV [0.5-1.2] vs 1.3mV [0.8-1.4];p=0.006).
Conclusion:
Electrical remodeling is most pronounced in PeAF patients, particularly at the middle part of BB. This raises the question whether BB should be considered as part of anti-arrhythmic treatment strategy.

Keywords:
Bachmann's Bundle, Atrial Fibrillation, Epicardial mapping

Figure:
Table 1: Mapping data of Bachmann's bundle in total and the left, middle, and right part separately for patients with induced AF without AF history (No-AF), paroxysmal and persistent AF. Pairwise comparisons were corrected using the Bonferroni method (α = 0.05/3). Significant differences are indicated with an asterix (*).

Parameter	No-AF (n=30)	P-value Induced vs paroxysmal	Paroxysmal (n=12)	P-value paroxysmal vs persistent	Persistent (n=20)	P-value induced vs persistent
Median Voltage (mV)						
Total	1.5 (1.2-1.9)	0.160	1.2 (0.9-1.6)	0.014*	0.8 (0.6-1.0)	<0.001*
Left	1.3 (0.9-2.0)	0.583	1.3 (0.8-1.4)	0.006*	0.6 (0.5-1.2)	0.003*
Middle	1.3 (1.0-1.6)	0.500	1.2 (1.0-1.35)	0.051	0.8 (0.5-1.0)	0.011*
Right	1.7 (1.2-2.4)	0.046	1.2 (0.8-1.8)	0.063	0.7 (0.6-1.1)	<0.001*
Median Cycle Length (ms)						
Total	199 (180-251)	0.550	199 (172-232)	0.024	171 (157-183)	<0.001*
Left	199 (185-249)	0.551	199 (177-245)	0.095	175 (159-189)	0.002*
Middle	197 (183-252)	0.778	197 (175-234)	0.007*	168 (150-176)	<0.001*
Right	199 (182-254)	0.742	196 (185-217)	0.026	171 (154-191)	0.004*
Fractionated potentials (%)						
Total	9.2 (7.7-14.2)	0.073	15.5 (11.3-17.8)	0.110	22.0 (14.3-27.5)	<0.001*
Left	7.3 (7.8-16.1)	0.307	11.9 (7.7-20.0)	0.330	19.9 (10.1-31.0)	0.022
Middle	9.6 (7.0-14.1)	0.144	15.2 (7.6-23.0)	0.114	24.6 (17.9-33.2)	<0.001*
Right	10.4 (6.1-13.7)	0.561	11.7 (6.5-20.6)	0.378	14.4 (8.4-25.9)	0.378
Conduction block (%)						
Total	54.6 (43.3-65.7)	0.122	65.0 (53.2-71.2)	<0.001*	85.1 (78.0-89.7)	<0.001*
Left	55.5 (45.3-71.4)	0.863	61.1 (50.7-68.8)	<0.001*	86.7 (78.9-93.2)	<0.001*
Middle	65.9 (60.8-69.7)	0.863	66.4 (58.7-73.5)	<0.001*	86.3 (82.2-92.1)	<0.001*
Right	55.3 (32.3-64.6)	0.050	67.8 (52.6-75.9)	0.007*	84.5 (74.7-90.7)	<0.001*

Session 1: EFO & devices
Abstract 6

Restrictive Dutch Sports Advice in Pacemaker and ICD Patients

Presenting author: P.B. Elias
Department: Cardiology

P.B. Elias (Amsterdam UMC); P.B. Ellias (Amsterdam UMC); M. Koster (Amsterdam UMC); K. Beunder (Amsterdam UMC); H.T. Jorstad (Amsterdam UMC); R.E. Knops (Amsterdam UMC); L. Olde-Nordkamp (Amsterdam UMC); N.R. Bijsterveld (Amsterdam UMC)

Purpose:
Despite growing evidence that sports and exercise is safe in patients with an implantable cardioverter-defibrillator (ICD) or pacemaker (PM), it is unknow whether counselling practices have become less restrictive. This study investigated Dutch clinical practice regarding counselling on sports participation in cardiac device recipients.
Methods:
A nationwide online survey was distributed to all device professionals in Dutch cardiology centers performing cardiac device implantation and/or follow-up. The survey assessed counselling practices, perceived risks, and advised sports restrictions by device professionals.
Results:
In total 169 device professionals (31% response rate) from 69 centers (100%) completed the survey. Respondents included device cardiologists (43%), device technicians (50%), ICD nurses (3%), and physician assistants/nurse practitioners (4%). Only 34% reported routinely discussing sports participation after device implantation (Table 1). More than 75% gave sports restrictions which were motivated by suspected risk of lead or generator damage (77%) or shock-related safety concerns (77%). Specifically, 85% discouraged contact sports (e.g., boxing) to prevent direct impact on the device, and 76% discouraged repetitive upper-body movements (e.g., rowing) for potential lead damage. Tailored counselling distinguishing between ICD and PM-recipients was reported by 66%. PM-recipients received more lenient recommendations due to the absence of shock risk. 58% recommended a six-week exercise and sport restriction after device implantation.
Conclusion:
In the Netherlands sports advice after device implantation remains more conservative than recommended by current guidelines and evidence base. A national uniform post-device sports advice protocol can potentially improve levels of care for active device patients.

Keywords:
sports and exercise, pacemaker, ICD

Figure:
Table 1. Reported sports counseling practices among Dutch device professionals

Counseling practices	**Percentage of total device professionals (n = 169)**
Sport routinely discussed during:	
- ICD counselling	34% (n=57)
- Pacemaker counselling	34% (n=57)
Device tailored sports advice:	
- PM vs ICD	66% (n=112)
- TV vs S-ICD	38% (n=64)
Any sports discouraged for:	
- Pacemaker patients	70% (n=118)
- ICD patients	77% (n=130)
Discouragement of all contact sports	84% (n=142)
Discouragement of all high repetitive upper-body movement sports	76% (n=128)
Restriction due to suspected risk of device-damage	77% (n=130)
Most common discouraged sports after device implantation:	
- Boxing	85% (n=144)
- Rowing	76% (n=128)
- Body-building	70% (n=118)
- Swimming	50%
6 week post-implant complete sports restriction	58% (n=98)

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Session 1: EFO & devices
Abstract 7

Oral Anticoagulants in Acute Coronary Syndrome with Atrial Fibrillation: a Head-to-Head Comparison

Presenting author: W.W. van der Maten
Department: Cardiology

W.W. van der Maten (Amsterdam UMC, Amsterdam); W.W. van der Maten (Amsterdam UMC, Amsterdam); N.M.R. van der Sangen (Amsterdam UMC, Amsterdam); I.T. Kucuk (Amsterdam UMC, Amsterdam); S. Sivanesan (Amsterdam UMC, Amsterdam); Q.Y.F. van de Pol (St. Antonius hospital, Nieuwegein); W.W.A. van den Broek (St. Antonius hospital, Nieuwegein); J. Azzahhafi (St. Antonius hospital, Nieuwegein); D.R.P.P. Chan Pin Yin (St. Antonius hospital, Nieuwegein); R.J. Walhout (Hospital Gelderse Vallei, Ede); R.M. Tjon Joe Gin (Rijnstate Hospital, Arnhem); R. Pisters (Rijnstate Hospital, Arnhem); D.M. Nicastia (Gelre Hospitals, Apeldoorn); G.J. de Roest (Rivierenland Hospital, Tiel); R.J. van Bommel (Tergooi MC; Hilversum), W.J. Kikkert (Tergooi MC; Hilversum); J.M. ten Berg (St. Antonius hospital, Nieuwegein); J.P.S. Henriques (Amsterdam UMC, Amsterdam)

Purpose:
Acute coronary syndrome (ACS) patients frequently have concurrent atrial fibrillation (AF), compounding ischemic and bleeding risks. Comparisons between specific types of oral anticoagulants (OACs) are lacking in patients with ACS and AF. Our objective was to compare the safety and efficacy between OACs in patients with ACS and AF.
Methods:
This prospective cohort study includes ACS patients with a history of AF or new AF, who used an OAC at discharge. OACs were categorized as rivaroxaban, apixaban, edoxaban, dabigatran and the vitamin K-antagonists (VKA) combined. A second analysis combined the first 4 groups comparing to VKA. Endpoints were cardiovascular death, major adverse cardiovascular events (MACE; composing of cardiovascular death, myocardial infarction and ischemic stroke) and bleeding events within 3 years.
Results:
Among 5813 patients, 575 had confirmed ACS and AF and were discharged on OACs. Group sizes ranged from 14 (edoxaban) to 269 patients (VKA). Cardiovascular mortality varied between 11.6% (VKA) and 14.3% (edoxaban). MACE rate varied between 23.2% (rivaroxaban) and 28.6% (edoxaban). Bleeding rate ranged from 7.1% (edoxaban) to 41.3% (VKA) with significant log-rank test ($p < 0.001$), significant more events for dabigatran (HR 2.33 (1.24 - 4.36) p=0.008) and VKA (HR 1.67 (1.16 – 2.40) p = 0.005). VKA had significant more bleeding events compared to the other OACs combined (HR 1.59 (1.2-2.1) p = 0.001).
Conclusion:
This cohort study showed no differences in cardiovascular death and MACE between different OACs. However, the number of bleeding events was significantly higher in the VKA-group compared to other OACs in this Dutch patient population.

Keywords:
acute coronary syndrome, atrial fibrillation, oral anticoagulants

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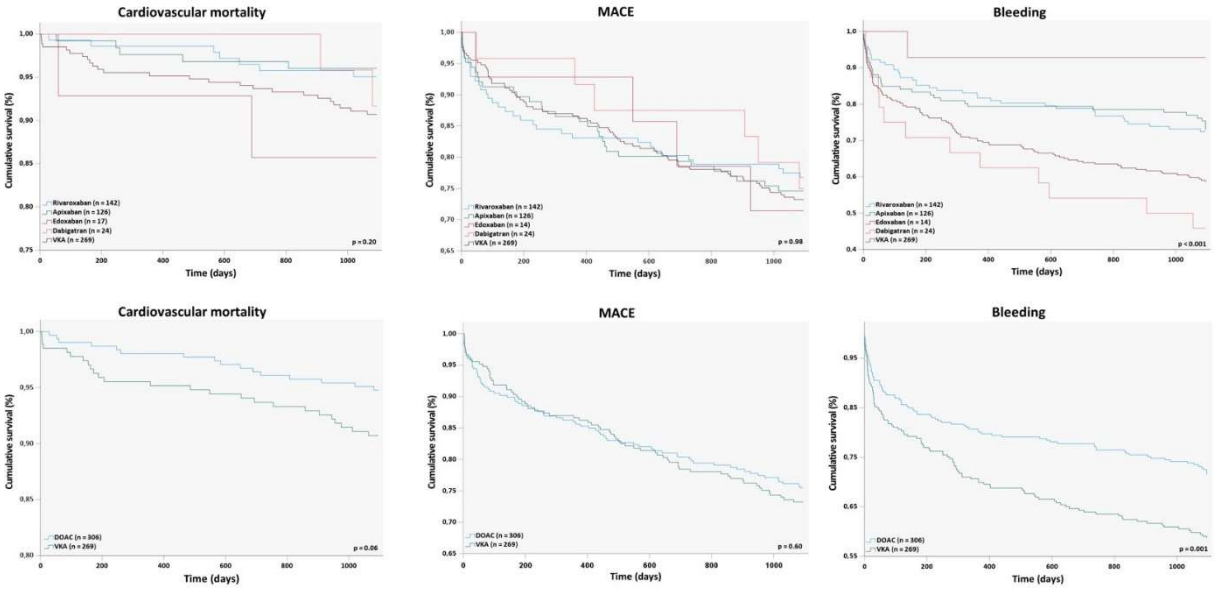
Figure:



ABSTRACTS
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Session 1: EFO & devices
Abstract 8

First Experience with Leadless AAI(R) Pacing in the Netherlands

Presenting author: A.A.C. Velraeds
Department: Cardiology

A.A.C. Velraeds (Amsterdam UMC, Amsterdam); A.A.C. Velraeds (Amsterdam UMC, Amsterdam); K.M. Kooiman (Amsterdam UMC, Amsterdam); F.V. Tjong (Amsterdam UMC, Amsterdam); R.E. Knops (Amsterdam UMC, Amsterdam); L.R.A. Olde Nordkamp (Amsterdam UMC, Amsterdam)

Purpose:
Since the CE-mark of the Aveir AR leadless pacemaker (LP) in 2024, AAI(R) pacing using single LP in the atrium became possible. This offers an alternative for patients with sinus node dysfunction (SND), for whom transvenous DDD pacing is currently recommended but associated with unnecessary RV pacing, which may induce cardiomyopathy, and two leads increase complication risk. Development of atrial LP allows to re-evaluate AAI(R) pacing in SND. This study evaluates the early outcomes of atrial LP.
Methods:
Ten patients received an atrial LP at Amsterdam UMC since October 2024. A Wenckebach point was assessed intraoperatively to evaluate AV node function. Patient characteristics, implant parameters, device settings, and longevity were analysed.
Results:
Mean age was 62 years, 4 patients were female. All implants were successful. In 9 patients the pacing indication was SND. Six patients required mapping at different positions. Two patients needed refixation. Implant locations were the RA appendage base (n=6) and the RA lateral wall (n=4). Intraoperatively, mean threshold was 2.8V@0.64ms and 1.2V@0.5ms the next day. In 1 patient atrial thresholds could not be assessed intraoperatively due to atrial fibrillation. After 2 months, mean longevity was 9.3 years. No complications occurred during a mean follow-up of 2.7 months (range 1–8 months); no patient required ventricular pacing.
Conclusion:
Atrial (AAI(R)) leadless pacing appears to be a valuable option for SND patients. Early clinical outcomes show no complications and good device performance. Continued follow-up is needed to evaluate long-term effects and device longevity.

Keywords:
Leadless pacemaker, Sinus node dysfunction, AAI pacing

Figure:
Different measurements and programmed parameters together with the remaining longevity during the last follow-up per patient (NR=not reported).

Patient (n)	Lower rate (bpm)	Pacing percentage (%)	P wave amplitude (V)	Impedance (Ω)	Programmed amplitude @ pulse width	Pacing threshold	Longevity in total (years)	Wenckebach point (bpm)
1	55	24	2	350	2,5 V @ 0,2 ms	1 V @ 0,2 ms	11,1	120
2	60	70	2,8	300	2 V @ 0,2 ms	0,75 V @ 0,2 ms	8,6	> 150
3	50	72	6,8	320	2 V @ 0,2 ms	0,5 V @ 0,2 ms	10	> 150
4	60	1	2,2	320	2,5 V @ 0,2 ms	0,5 V @ 0,2 ms	13,4	> 150
5	60	56	3	310	2 V @ 0,2 ms	0,5 V @ 0,2 ms	10,1	135
6	40	1	3	350	2,5 V @ 0,2 ms	0,75 V @ 0,2 ms	13,5	> 150
7	50	33	1,4	310	2 V @ 0,2 ms	1 V @ 0,2 ms	9,2	70
8	60	88	4,1	300	2 V @ 0,2 ms	0,75 V @ 0,2 ms	7	140
9	60	17	3,6	320	2 V @ 0,2 ms	0,5 @ 0,2 ms	8,3	> 150
10	70	99	3,8	230	3 V @ 0,4 ms	1,5 V @ 0,4 ms	1,8	NR