



**ABSTRACTS**  
**NVVC Najaarscongres 2025**  
**Donderdag 6 november**  
**09.00 – 10.30 uur**

**SESSIE 2: Imaging & diagnostics**

	Zaal 4/5	Voorzitters: dr. Rosemarijn Jansen, AIOS St. Antonius Ziekenhuis, dr. Maarten-Jan Cramer, cardioloog UMC Utrecht
1	09.00 - 09.10	<b>Assessing ASD Arrhythmogenic Substrate Using Atrial Strain Echocardiography: a Prognostic Tool?</b> <i>M.H.C. Linderhof (Erasmus MC, Rotterdam)</i>
2	09.11 - 09.21	<b>Non-Invasive Measurements of Elevated Intra-Cardiac Pressures by Photoplethysmography Compared to Right Heart Catheterization: a Prospective Observational Study</b> <i>K. Buitenhuis (Zuyderland, Heerlen)</i>
3	09.22 - 09.32	<b>Automated Monitoring of Urine Output in Hospitalized Patients with Indwelling Urinary Catheters: a Clinical Evaluation on the Cardiology Ward</b> <i>J. Perdeck (Amsterdam UMC, Amsterdam)</i>
4	09.33 - 09.43	<b>Quantification of Right Ventricular Remodelling in Pulmonary Hypertension using 3D Echocardiography</b> <i>J.W. Schneijdenberg (Erasmus MC, Rotterdam)</i>
5	09.44 - 09.54	<b>Cardiac MRI for Risk Stratification in CRT-D: Which Non-Ischemic Cardiomyopathy Patient Benefits from a Defibrillator?</b> <i>A.C. Tuinman (Amsterdam UMC, Amsterdam)</i>
6	09.55 - 10.05	<b>Left Ventricular End Diastolic Diameter-based Indexation Eliminates Sport-category Differences in Aortic Root Dimensions: a Cardiac-MRI Study</b> <i>H. El Hri, (Amsterdam UMC)</i>
7	10.06 - 10.16	<b>Less Is More: Optimizing Echocardiographic Screening for Cardio-embolic Sources</b> <i>L.A. Dijkshoorn (Amsterdam UMC, Amsterdam)</i>
8	10.17 - 10.27	<b>Sex Differences in Coronary Plaque Burden and Plaque Progression during 10-year Serial Coronary CT Angiography Follow-up</b> <i>E.L. Gaillard (Amsterdam UMC, Amsterdam)</i>



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**Session 2: Imaging & diagnostics**

Abstract 1

**Assessing ASD Arrhythmogenic Substrate Using Atrial Strain Echocardiography: a Prognostic Tool?**

Presenting author: M.H.C. Linderhof

Department: Cardiology

*M.H.C. Linderhof (Erasmus MC, Rotterdam); M.H.C. Linderhof (Erasmus MC, Rotterdam); A.I. Freriks (Erasmus MC, Rotterdam); E.C.H. van Doorn (Erasmus MC, Rotterdam); M.S. van Schie (Erasmus MC, Rotterdam); Y.J.H.J. Taverne (Erasmus MC, Rotterdam); N.M.S. de Groot (Erasmus MC, Rotterdam); A.E. van den Bosch (Erasmus MC, Rotterdam)*

**Purpose:**

Patients with atrial septal defects (ASD) experience chronic right atrial volume overload, leading to structural remodeling of the atria, which in turn affect atrial electrical and mechanical properties. Prior studies demonstrated that low atrial strain values assessed by speckle tracking echocardiography, were particularly present in patients with chronic volume overload and atrial tachyarrhythmias. The exact relationship between atrial strain parameters are related to electrical properties of the atria, is, however, unknown. Purpose: To assess associations between atrial strain parameters and epicardial electrical properties in ASD-patients measured at a high resolution scale.

**Methods:**

Intraoperative high-density epicardial mapping (192 electrograms) during sinus rhythm was performed in adult patients undergoing surgical ASD closure (N=39). The unipolar potential voltages, fractionation, and conduction block (CB:  $\geq 12$ ms) were measured. Preoperative transthoracic echocardiograms were used to derive reservoir, conduit, and contractile strain values for both atria. Cycle durations and slopes of both reservoir and contractile phases were calculated. Results were compared to a reference group with minimal arrhythmogenic substrate (N=19).

**Results:**

Higher RA reservoir strain correlated with more single potentials and less CB ( $p=0.50$ ,  $p<0.01$ ;  $\rho=-0.47$ ,  $p<0.01$ ). Similar correlations were found for RA reservoir slope and conduit strain. A steeper slope preceding LA reservoir strain was correlated with fewer fractionated potentials and less CDCB lines ( $\rho=-0.43$ ,  $p=0.01$ ;  $\rho=-0.40$ ,  $p=0.02$ ). ASD-patients showed significantly flatter contractile slopes, reservoir slopes, and longer strain cycles compared to patients with limited arrhythmogenic substrate ( $p<0.01$ ).

**Conclusion:**

Lower atrial strain values and flatter slopes showed moderate but significant correlations with electrophysiological properties indicative of potential arrhythmogenic substrates.

**Keywords:**

Strain, Electrophysiology, Atrial Septal Defect



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Abstract 2

**Non-Invasive Measurements of Elevated Intra-Cardiac Pressures by Photoplethysmography Compared to Right Heart Catheterization: a Prospective Observational Study**

Presenting author: K. Buitenhuis

Department: Cardiology

*M. Hoen (Zuyderland, Heerlen); M. Hoen (Zuyderland, Heerlen); D.E. Hofman (Erasmus MC, Rotterdam); K. Buitenhuis (Zuyderland, Heerlen); S. Sanders-van Wijk (Zuyderland, Heerlen)*

**Purpose:**

Adequate estimation of congestion status in heart failure (HF) patients is essential for timely adjustment of diuretic therapy and to prevent (re)admissions for decompensated HF. However, easily available and non-invasive modalities to reliably assess fluid status remotely are insufficiently accessible. Photoplethysmography (PPG) is widely available in fingertip devices, wearables and smart devices. However, there is need for more prospective data on the value of PPG in the assessment of fluid congestion and intra-cardiac pressures.

**Methods:**

Adult patients with a planned right heart catheterization (RHC) were included in the study. Before, during and after right heart catheterization a 2-minute PPG measurement was conducted by a pulse oximeter. These PPG-based parameters were associated with the measurements from RHC to assess their diagnostic value. The primary endpoint was mean pulmonary artery pressure (mPAP) >20mmHg.

**Results:**

28 patients were included in the analysis (mean age of  $66 \pm 7.7$  years, 71.4% female), of which 25% were known with pre-existing heart failure. There is a significant difference in reflection index and dicrotic notch index between subjects with mPAP >20 mmHg versus  $\leq 20$  mmHg. Several PPG-parameters showed good diagnostic capabilities in identifying mPAP >20mmHg (figure 1), however correlations were poor. Moreover, there was a striking discrepancy between the peri-procedural and pre- and post-procedural measurements.

**Conclusion:**

Our data suggest that PPG might be a promising (tele)monitoring modality in the identification of increased cardiac filling pressures. Larger studies are needed in the HF population to confirm the diagnostic capabilities of PPG in fluid congestion.

**Keywords:**

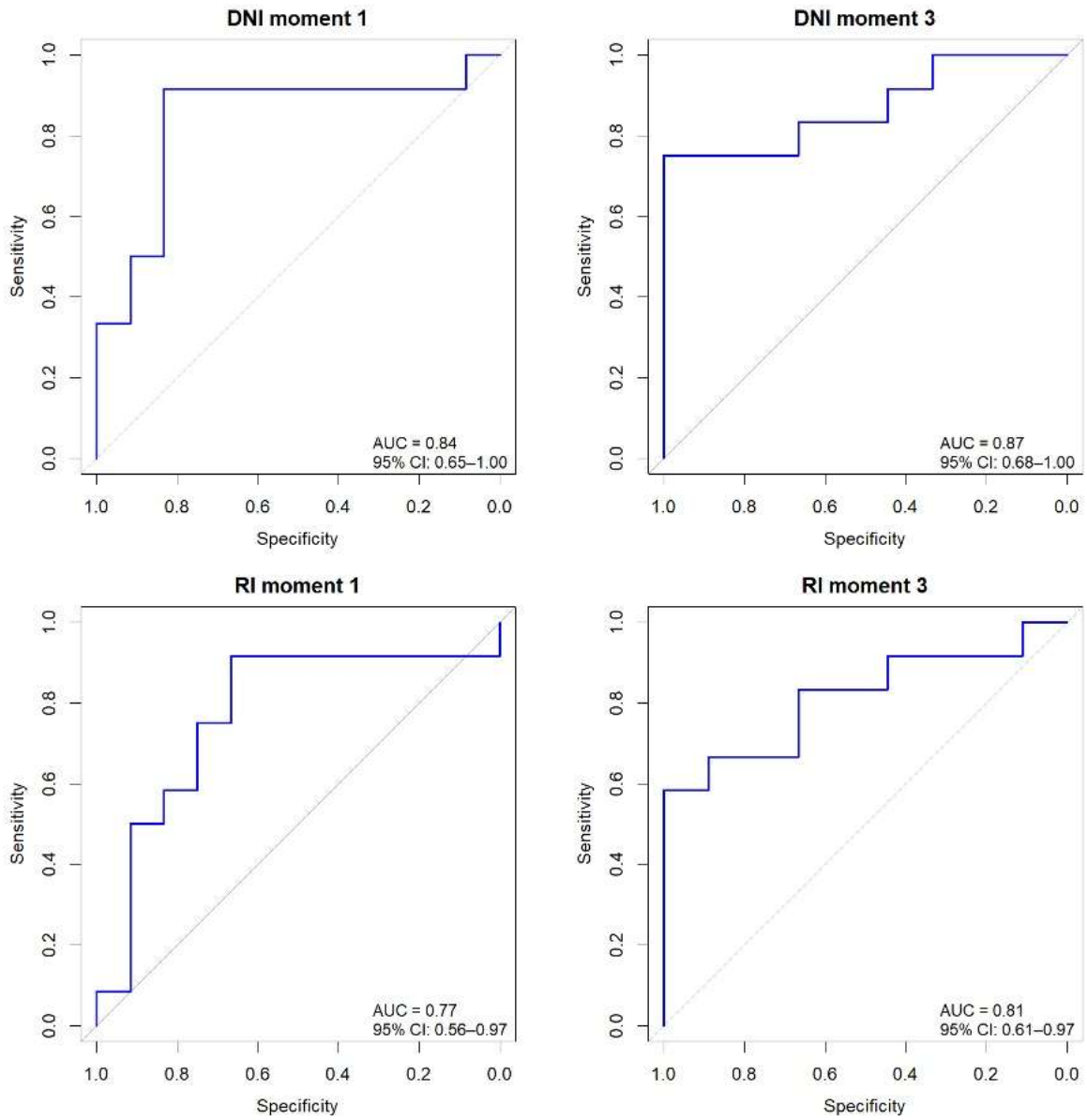
heart failure, intra-cardiac pressures, photoplethysmography



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**Figure:**

Figure 1: AUC's PPG on mPAP > 20 mmHg





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Abstract 3

**Automated Monitoring of Urine Output in Hospitalized Patients with Indwelling Urinary Catheters: a Clinical Evaluation on the Cardiology Ward**

Presenting author: J. Perdeck

Department: Cardiology

*J. Perdeck (Amsterdam UMC, Amsterdam); G. Sussenbach (Amsterdam UMC, Amsterdam); E. Bradshaw (Amsterdam UMC, Amsterdam); I.K. Go (Amsterdam UMC, Amsterdam); R.E. Knops (Amsterdam UMC, Amsterdam); T.F. Brouwer (Amsterdam UMC, Amsterdam)*

**Purpose:**

Urine output is a key clinical parameter for assessing hemodynamic status, yet manual measurement and documentation are often incomplete and error-prone due to their labour-intensive nature. The Gravity of Flow study evaluated an in-house developed urine production gauge (UPG), designed to automatically and continuously measure urine output (UO) and directly register values in the electronic health record (EHR). The device is compatible with standard urine collection bags and removes the need for a separate measuring chamber, potentially reducing waste and cost.

**Methods:**

In this single-centre observational study, 25 patients (519 monitored hours) with indwelling urinary catheters were enrolled at the Amsterdam UMC cardiology wards. In 72 % of admissions, patients received diuretics for recompensation. UO was measured both manually and with the UPG, using a 24-hour urine container as gold standard. The primary outcome was hourly data completeness; secondary outcomes were accuracy and bias.

**Results:**

The UPG achieved a median completeness of 100 % versus 40 % for manual charting ( $p < 0.001$ ). Accuracy was high, with a median absolute percentage error of 2.3 % (IQR 1.4–4.6 %) and  $\pm 5$  % equivalence ( $p = 0.044$  and  $0.002$ ; 78.3 % within bounds). Bias was minimal (median  $-3$  mL, LoA  $-442$  to  $+108$  mL). Performance was consistent across UO subgroups, with only a borderline low–high difference in error ( $p = 0.048$ ). Manual charting did not meet equivalence (30.4 % within bounds).

**Conclusion:**

The UPG enables accurate, continuous, and near-complete UO monitoring, supporting improved fluid management and reduced nursing workload. Further studies should examine its use in other settings and longer durations.

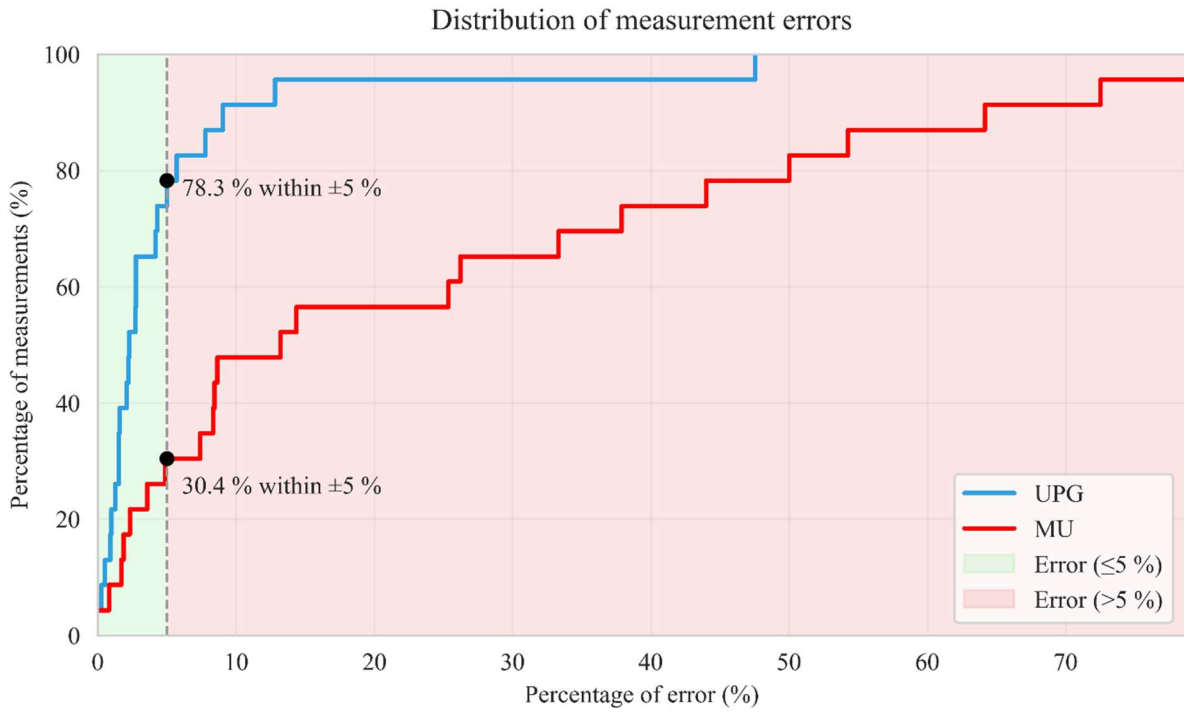
**Keywords:**

diuresis, heart failure, automated monitoring



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**Figure:**  
Accuracy profile of 24-hour urine volume measurements





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Abstract 4

**Quantification of Right Ventricular Remodelling in Pulmonary Hypertension using 3D Echocardiography**

Presenting author: J.W. Schneijdenberg

Department: Cardiovascular Institute, Thorax Center, Department of Cardiology

*J.W. Schneijdenberg (Erasmus MC, Rotterdam); K.A. Boomars (Erasmus MC, Rotterdam); D.J. Bowen (Erasmus MC, Rotterdam); B. Raposo Loff Barreto (Erasmus MC, Rotterdam); G. van Burken (Erasmus MC, Rotterdam); J.G. Bosch (Erasmus MC, Rotterdam); A.E. van den Bosch (Erasmus MC, Rotterdam)*

**Purpose:**

In pre-capillary pulmonary hypertension (PH), increased pulmonary vascular resistance leads to a compensatory rise in pulmonary arterial pressure. Consequently, the right ventricle (RV) undergoes structural and functional remodelling, which could lead to fatal RV failure. This study aims to investigate the potential of 3D echocardiography (3DE) to gain insight in RV remodelling in patients with pre-capillary PH.

**Methods:**

RV-focused 3DE images were obtained from 18 pre-capillary PH patients and 50 healthy controls, and converted to dynamic 3D meshes (4D RV-Function 3, TomTec, Unterschleissheim). A dedicated method was developed in a custom software application (RV-Dynamics) to decompose RV contraction in longitudinal, radial, and anteroposterior motion directions, and a novel approach was implemented to quantify regional endocardial curvature. These analyses allowed for detailed assessment of both functional and morphological RV remodelling.

**Results:**

Functional analysis revealed that radial contraction was most impaired in PH patients, showing significant reduction compared to healthy controls ( $P < 0.001$ ). In contrast, longitudinal contraction exhibited no significant difference between both groups. Curvature was reduced the most in the inferior free wall in PH patients compared to controls. Additionally, significant end-systolic septal flattening was quantified ( $P < 0.001$ ) (Figure 1).

**Conclusion:**

Whereas radial contraction was evidently reduced in PH patients, longitudinal contraction was preserved, underlining the importance of multidirectional functional assessment. Morphological alterations were most evident in the inferior free wall and septum, emphasising the need for regional quantification. Together, these findings demonstrate the unique value of 3DE for detailed characterization RV remodelling, which may contribute to improved phenotyping and risk stratification.

**Keywords:**

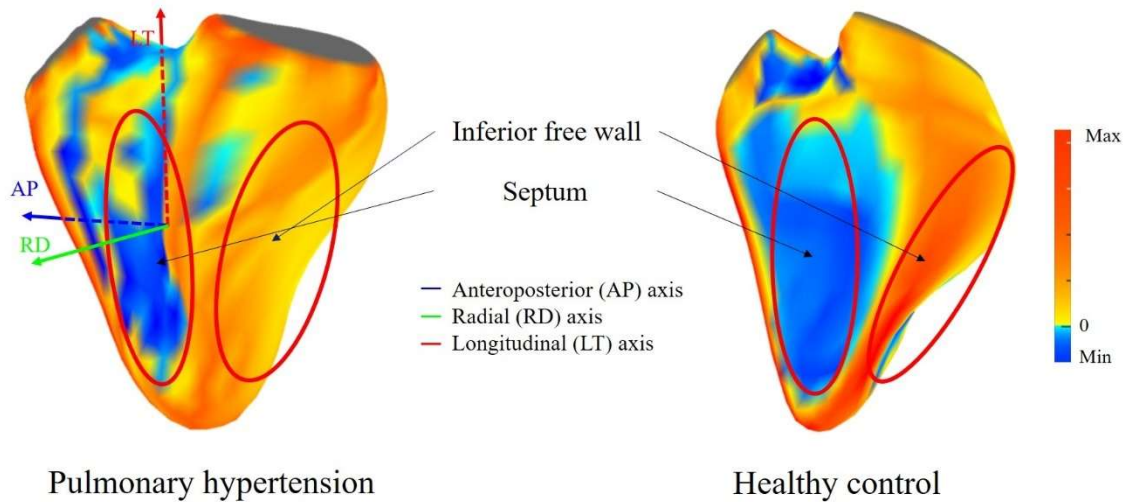
Right Ventricle Remodelling, Pulmonary Hypertension, Three-Dimensional Echocardiography



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**Figure:**

Figure 1: Regional curvatures projected on a 3D RV mesh of a representative PH patient and a healthy control in end-systole. Most pronounced differences in curvature between PH patients and healthy controls have been encircled. Decomposition axes in anteroposterior, radial, and longitudinal contraction directions have been visualised.





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Abstract 5

**Cardiac MRI for Risk Stratification in CRT-D: Which Non-Ischemic Cardiomyopathy Patient Benefits from a Defibrillator?**

Presenting author: A.C. Tuinman

Department: Cardiology

*A.C. Tuinman (Amsterdam UMC, Amsterdam); L.H.G.A. Hopman (AmsterdamUMC, Amsterdam); S.E.N. van der Geest (AmsterdamUMC, Amsterdam); P.J. van Rosendael (LUMC, Leiden); M.J.W. Götte (AmsterdamUMC, Amsterdam); V.P. van Halm (AmsterdamUMC, Amsterdam); C.P. Allaart (AmsterdamUMC, Amsterdam)*

**Purpose:**

The added value of a defibrillator (CRT-D) over a pacemaker (CRT-P) in non-ischemic cardiomyopathy (NICM) is under debate. Recent Dutch guidelines recommend CRT-P due to lack of survival benefit. Cardiac MRI (CMR) may help identify patients who do benefit from a defibrillator.

**Methods:**

In this retrospective cohort study, NICM patients with an ejection fraction <35% who received de novo CRT-D between 2009-2022 and underwent pre-implantation CMR were included. Late gadolinium enhancement (LGE) and mechanical dyssynchrony (systolic stretch index, SSI) were assessed. The primary outcome was appropriate device therapy (ADT); secondary outcome was all-cause mortality.

**Results:**

Of the 115 CRT-D patients, 101 had images for LGE analysis; 45 (44.6%) were LGE-positive. In these, LGE was present in median 2 segments (IQR 2–3). In 86 patients, SSI analysis was available, median SSI was 8.96 (IQR 5.2).

Over median 5.0 years, 9.7% experienced ADT, without differences by LGE or SSI. Among LGE-positive patients, those with ADT had greater LGE burden (median 6 vs 2 segments;  $P=0.02$ ).

During follow-up, 29.2% died; mortality did not differ by LGE or SSI. Neither LGE nor SSI was associated with mortality. In multivariable analysis, age (HR 1.082;  $P=0.002$ ) and creatinine (HR 1.010;  $P=0.01$ ) were independently associated with mortality.

**Conclusion:**

In NICM patients undergoing CRT-D implantation, neither LGE presence nor mechanical dyssynchrony on CMR predicted device therapy or mortality. However, a higher LGE burden may be associated with increased risk of appropriate device therapy. Larger studies are needed to determine whether LGE burden can guide the choice between CRT-D and CRT-P.

**Keywords:**

Cardiac Resynchronization Therapy, Cardiac MRI, Non Ischemic Cardiomyopathy



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**Figure:**

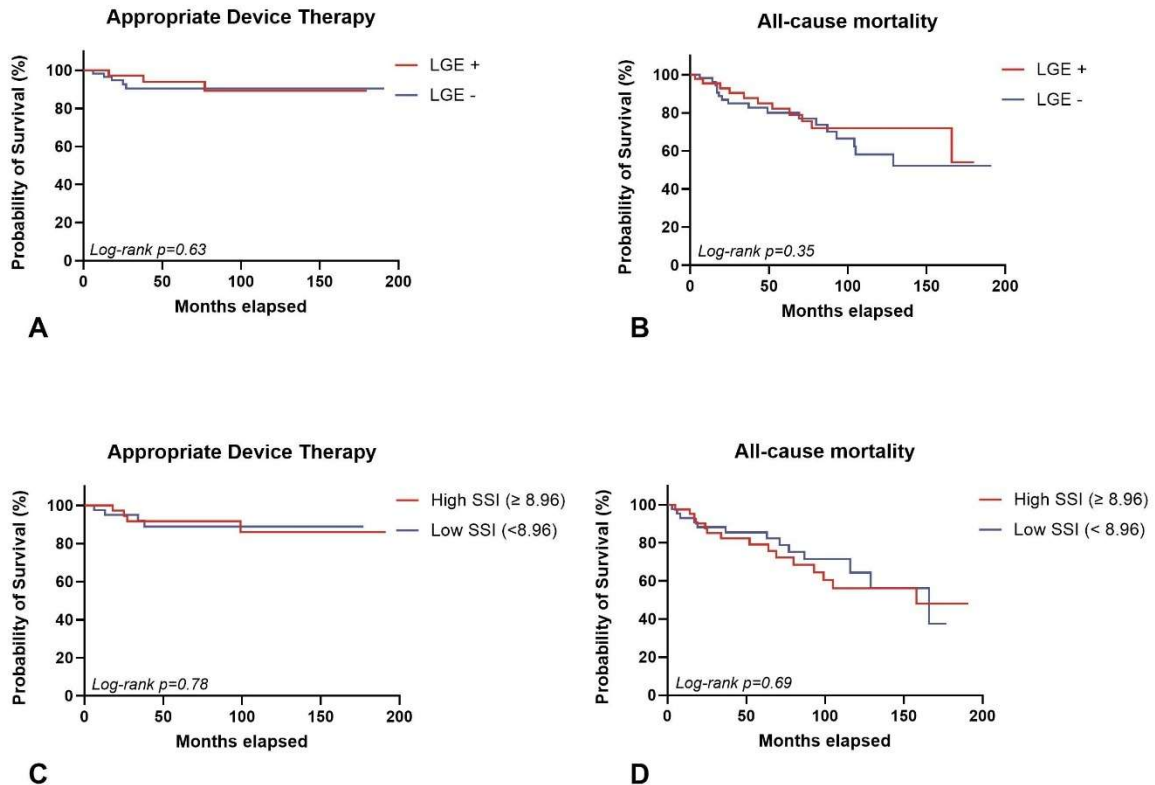
Figure 1. Kaplan Meier curves for ADT and mortality in NICM CRT-D patients.

Panel A: Kaplan-Meier analysis stratified by LGE-positive and LGE-negative CRT-D patients, showing the occurrence of appropriate device therapy (ADT),  $p = 0.63$ .

Panel B: Kaplan-Meier analysis stratified by LGE-positive and LGE-negative CRT-D patients, showing mortality,  $p = 0.35$ .

Panel C: Kaplan-Meier analysis stratified by SSI high and SSI low CRT-D patients, showing the occurrence of ADT,  $p = 0.78$ .

Panel D: Kaplan-Meier analysis stratified by SSI high and SSI low CRT-D patients, showing the occurrence of mortality,  $p = 0.69$ .





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Abstract 6

**Left Ventricular End Diastolic Diameter-based Indexation Eliminates Sport-category Differences in Aortic Root Dimensions: a Cardiac-MRI Study**

Presenting author: H. El Hri

Department: Cardiology

*H. El Hri, (Amsterdam UMC); F.J. van Leusden (Amsterdam UMC); M.A. van Diepen (Amsterdam UMC); J.J.N. Daems, (Amsterdam UMC); S.M. Verwijs (Amsterdam UMC); A. van Randen (Amsterdam UMC); M. Boekholdt (Amsterdam UMC); M. Groenink (Amsterdam UMC); M. Sntarse-Zuidam (Amsterdam UMC); H.T. Jorstad (Amsterdam UMC)*

**Purpose:**

Exercise-induced cardiac remodeling may cause increased aortic dimensions in athletes. ESC guidelines recommend indexation to BSA and height but these methods fail to incorporate the physiological increases. We aimed to investigate indexation of aortic dimensions to LVEDD in ESC sport categories and its impact on reclassification of dilation.

**Methods:**

Cross-sectional CMR-imaging study among elite athletes that underwent routine screening ( $\geq 16$  years;  $\geq 10$ h exercise/week without history of heart disease and no para-athletes). Athletes were categorized by ESC sport category (endurance, mixed, power/skill). Aortic root was measured at sinus of Valsalva, dilation was defined as an absolute measurement  $>40$ mm in males and  $>34$ mm in females. Z-scores were calculated within sport categories, using non-dilated athletes.

**Results:**

In 342 elite athletes (42% female; mean age  $28.8 \pm 6.8$  years; 46% endurance, 40% mixed, 14% skill/power), 56 (16%) were classified as dilated (30 endurance, 23 mixed, 3 skill/power). We found a difference between sports categories when indexing to BSA (endurance:  $18.06 \pm 1.98$  mm/m<sup>2</sup>; mixed:  $17.12 \pm 1.85$ ; power/skill:  $17.13 \pm 2.12$ ,  $p < 0.05$ ) and height (endurance:  $0.19 \pm 0.02$ ; mixed:  $0.18 \pm 0.02$ ; power/skill:  $0.18 \pm 0.02$ ,  $p < 0.05$ ), respectively. However, after indexation to LVEDD there were no differences in aortic dimension between sports categories (endurance:  $0.58[0.54-0.61]$ ; mixed:  $0.57[0.53-0.62]$ ; power/skill:  $0.58[0.54-0.60]$ ,  $p = 0.89$ ). Within the dilated athletes,  $Z > 2$  SD was observed in 16 (29%) for BSA, 22 (39%) for height, and 8 (14%) for LVEDD indexed values.

**Conclusion:**

LVEDD-based indexation eliminated differences between ESC sports category and may better incorporate exercise-induced cardiac remodeling, reclassifying the majority of dilated athletes within group-specific Z-scores. Thereby, it may be superior in distinguishing cardiac adaptation from pathology.

**Keywords:**

Aortic dilation, Athletes, Cardiac magnetic resonance imaging (CMR)

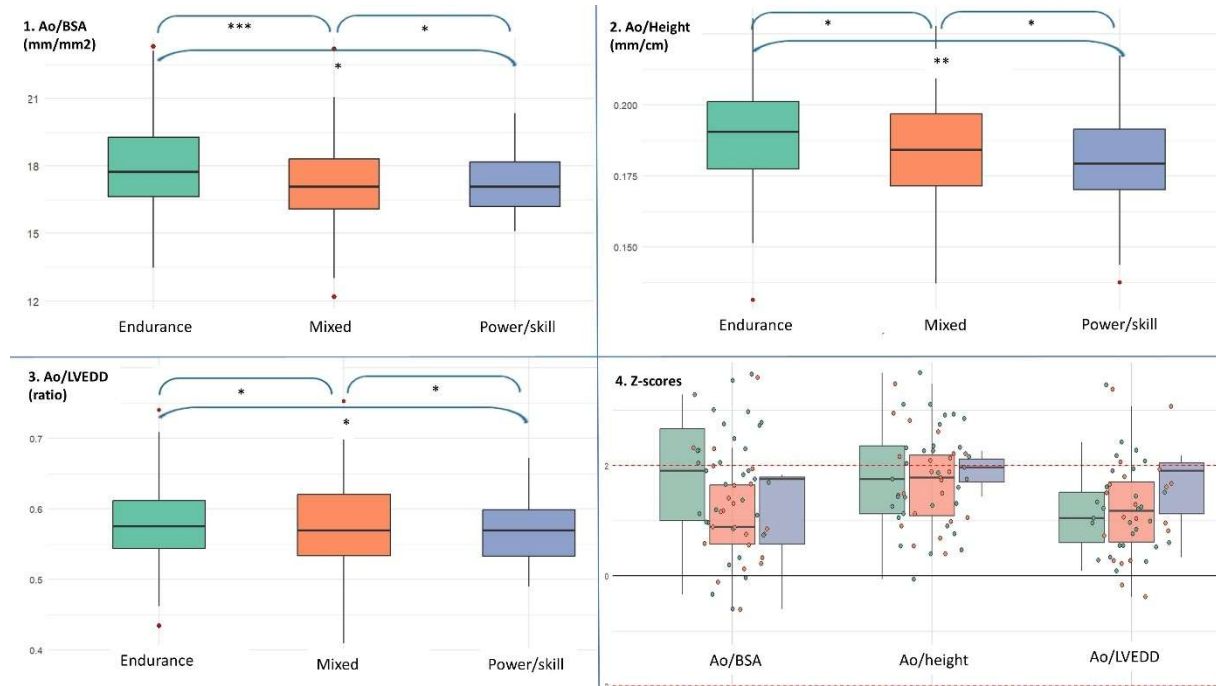


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**Figure:**

Figure 1-3. Indexation methods of the aortic root per sport category, \*  $p > 0.05$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$ .

Figure 4. Z-score distribution of dilated athletes per indexation method compared to sport-specific non-dilated athletes.





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Abstract 7

**Less Is More: Optimizing Echocardiographic Screening for Cardio-embolic Sources**

Presenting author: L.A. Dijkshoorn

Department: Cardiology

*L.A. Dijkshoorn (Amsterdam UMC, Amsterdam); L.A. Dijkshoorn (Amsterdam UMC, Amsterdam); M. Nassif (Amsterdam UMC, Amsterdam); M. Hosny (Amsterdam UMC, Amsterdam); A. Kraaijeveld (Spaarne Gasthuis, Haarlem); R. Tukkie (Spaarne Gasthuis, Haarlem); B.J. Bouma (Amsterdam UMC, Amsterdam); L. Breukel (Spaarne Gasthuis, Haarlem)*

**Purpose:**

Current guidelines recommend routine echocardiography in screening for cardio-embolic sources (CES) after ischemic stroke/TIA of undetermined source (ESUS). This challenges the overburdened healthcare system, especially considering the low diagnostic yield (~4%). We investigated the yield of echocardiography and the predictive value of abnormal ECG on echocardiographic CES in a high-volume non-academic Dutch hospital.

**Methods:**

This retrospective cohort study included consecutive ESUS patients referred for routine cardiac screening in a 24-month period. Patients with major CES were excluded. Echocardiographic studies were included if performed after the referral date. The study population was split into patients with an established indication for echocardiography, i.e. potentially benefitting from PFO-closure (age  $\leq 60$ -years-old or RoPE score  $\geq 6$ ) and a group non-eligible for PFO-closure. All data was derived from electronic health records.

**Results:**

Of 822 patients, 666 were in the non-eligible group (median age 75-years-old, 49% male, 50% stroke) with 5.4% (N=36) atrial fibrillation. Echocardiography revealed no major CES and 2.2% (N=11) minor CES, of which N=7 had an abnormal ECG. 3/4 patients with normal ECG had severe aortic stenosis with documented murmurs, and one had severe LV dysfunction; none affected secondary stroke management. The remaining 156 patients (median age 54-years-old, 63% male, 59% stroke) had 1.4% (N=2) minor CES and 22% (N=24) PFO by contrast echocardiography.

**Conclusion:**

Routine echocardiography in patients non-eligible for PFO-closure with a normal ECG yielded low CES without change of secondary preventive measures. We therefore propose a new diagnostic work-up strategy in these specific patients, abandoning routine TTE unless ECG and/or physical examination reveal abnormalities.

**Keywords:**

echocardiography, embolic stroke of undetermined source, cardiac screening



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**Figure:**

Data are presented as frequencies (%). PFO= Patent foramen ovale; CES= cardio-embolic source.

\* Median 43[30-59] days after referral date; median ambulant monitoring duration 48[48-72hrs], excluding rhythm monitoring during hospital stay.

† Median 50[27-70] days after referral date.

‡ By contrast echocardiography using agitated saline).

§ Left atrial (appendage) or aortic thrombus, left ventricular thrombus or aneurysm, mitral valve stenosis, intracardiac tumour, endocarditis.

|| Aortic valve stenosis, complex aorta atheroma, left ventricular ejection fraction <35%.

**Table 1:** Results of cardiac screening in both study groups.

	<b>Non-eligible for PFO-closure N= 666</b>	<b>Potentially eligible for PFO-closure N= 156</b>	<i>P-value</i>
<b>ECG abnormalities</b>			0.54
Atrial fibrillation	3 (0.5%)	0	
Q-wave or abnormal anterior R-wave	44 (6.6)	11 (7.1)	
Disrupted repolarisation	55 (8.3)	15 (9.6)	
New left bundle branch block	6 (0.9)	0	
<b>Ambulant rhythm monitoring *</b>			
Atrial fibrillation	33 (5.0%)	6 (3.8%)	0.56
<b>Echocardiography †</b>	N=489	N=146	
Left ventricular ejection fraction			0.52
30-50%	23 (3.5%)	2 (1.3%)	
>50%	618 (96%)	150 (98%)	
<b>Total CES</b>	11 (2.2%)	29 (20%)	<0.001
Patent foramen ovale ‡	-	27 (18%)	
Major CES §	0	0	
Minor CES			
Left ventricular ejection fraction <35%	4 (1.2%)	2 (1.4%)	
Moderate/ severe aortic stenosis	6 (1.6%)	0	
Both	1 (0.2%)	0	



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Abstract 8

**Sex Differences in Coronary Plaque Burden and Plaque Progression during 10-year Serial Coronary CT Angiography Follow-up**

Presenting author: E.L. Gaillard

Department: Cardiologie en Vasculaire Geneeskunde

*E.L. Gaillard (Amsterdam UMC, Amsterdam); N.S. Nurmohamed (Amsterdam UMC, Amsterdam); M.J. Bom (Amsterdam UMC, Amsterdam); R. N. Planken (Amsterdam UMC, Amsterdam); S.M. Boekholdt (Amsterdam UMC, Amsterdam); A.D. Choi (Amsterdam UMC, Amsterdam); E.S.G. Stroes (Amsterdam UMC, Amsterdam); P. Knaapen (Amsterdam UMC, Amsterdam)*

**Purpose:**

Sex-specific differences in coronary artery disease (CAD) have been observed with a delayed onset of CAD, a lower plaque burden and less obstructive CAD in women. It has been suggested that women have accelerated plaque development and increased cardiovascular disease risk after menopause. Understanding these sex differences in coronary atherosclerosis development is crucial for improved CAD risk assessment and prevention strategies. This study investigated sex-based differences in coronary atherosclerotic burden and 10-year plaque progression in postmenopausal women and men.

**Methods:**

Per-protocol, patients from a coronary CT angiography (CCTA) cohort were invited for repeat CCTA imaging. A total of 299 patients underwent follow-up imaging with a median scan interval of 10.2 [IQR 8.7-11.2] years. Patients who underwent coronary artery bypass grafting and vessels revascularized by percutaneous coronary intervention were excluded. Scans were analyzed using atherosclerosis imaging-quantitative CCTA analysis (AI-QCT; Cleerly Inc.). Baseline and follow-up measurements of total and compositional plaque volume were normalized to the analyzed total vessel length. The associations between sex, baseline and follow-up plaque characteristics were evaluated using multivariable regression adjusted for age, clinical risk factors, statin use, baseline plaque volumes and scanner settings. Propensity score matching based on baseline plaque volume and age was used for analyzing plaque progression.

**Results:**

In total, 267 patients were included, 114 (43%) were women. The mean age was 57±7 years, women had higher high density lipoprotein (HDL) cholesterol levels (1.64 ± 0.54 mmol/l vs. 1.29 ± 0.48 mmol/l; p<0.001) and lower triglycerides (1.10 (0.09, 1.70) mmol/l vs. 1.50 (1.10, 2.40) mmol/l; p<0.001). No difference in the prevalence of clinical risk factors (diabetes, hypertension, hypercholesterolemia, family history of CAD, smoking history) and medication use was observed (all p>0.05). At baseline, women had a lower median percent atheroma volume (PAV) (1.7%; IQR 0.4-4.2 vs. 3.2%; IQR 0.9-8.5; p =0.001), less non calcified percent atheroma volume (NCPAV) (1.3%; IQR, 0.3-2.8 vs. 2.7%; IQR 0.8-6.4; p =0.001) as well as less calcified percent atheroma volume (CPAV) (0.0%; IQR 0.0-1.2 vs 0.6%; IQR 0.0-2.54; p =0.014). In multivariate analysis, female sex was associated with less high risk plaque (HRP) ( $\beta = -0.667$ ; p = 0.034) and less low-attenuation plaque (LAP) ( $\beta = -0.798$ ; p = 0.044). After propensity score matching women had a significantly lower NCPAV progression (0.94% vs 1.66%; p = 0.012, Figure 1) and overall PAV progression was higher in men (2.90% vs 4.24%; p = 0.032, Figure 1).

**Conclusion:**

A lower rate of noncalcified and total plaque progression and less development of HRP and LAP was observed in women. These results suggest that developing sex-specific risk



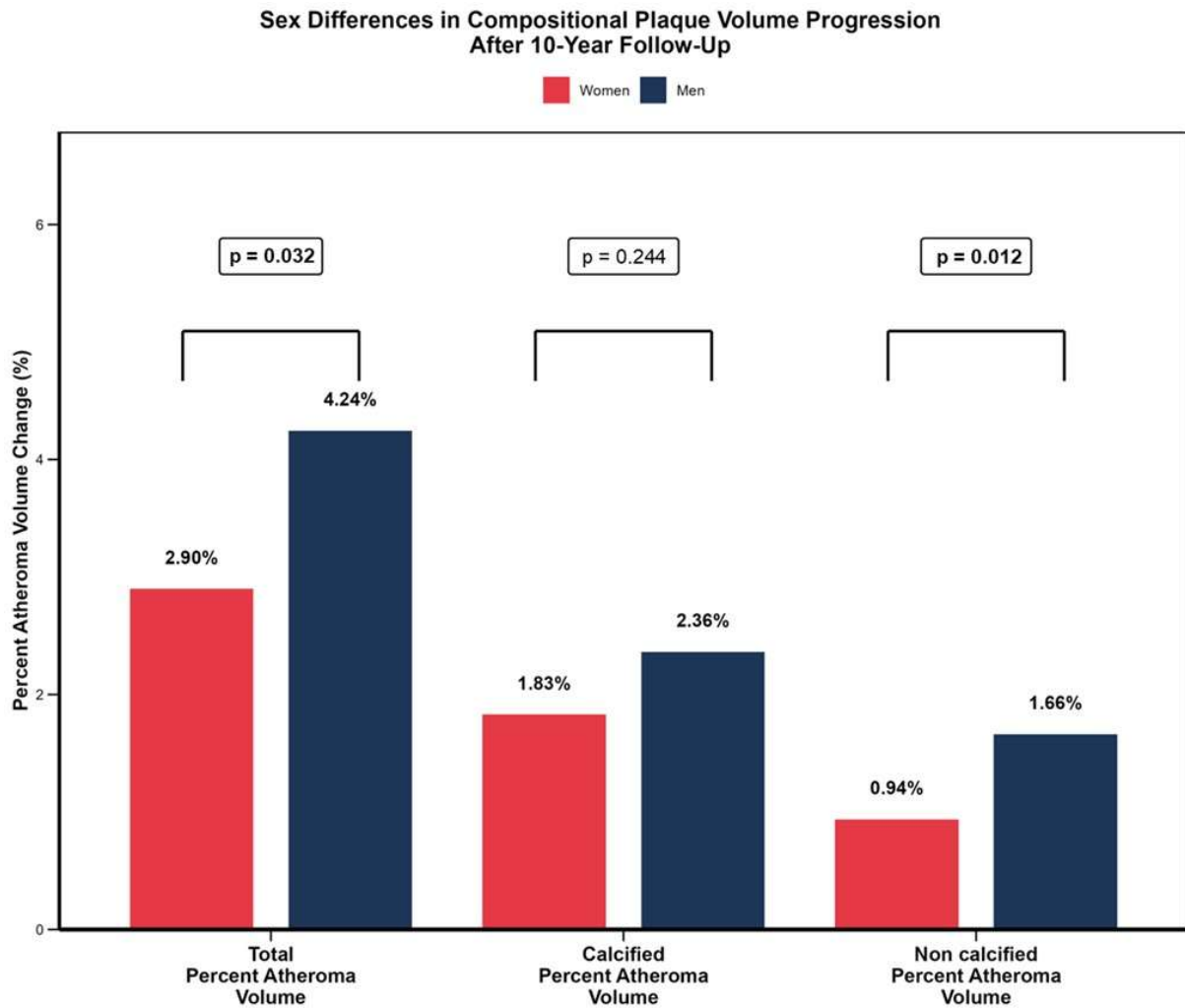
**ABSTRACTS**  
**NVVC Najaarscongres 2025**  
**Donderdag 6 november**  
**09.00 – 10.30 uur**

assessment tools could enhance cardiovascular risk estimation.

**Keywords:**

Coronary Artery Disease, imaging, coronary plaque burden

**Figure:**



Differences in compositional plaque volume change between women and men after propensity score matching by age and baseline plaque volumes