

SESSIE 1: Coronary heart disease & risk prediction

	Zaal 1/2	Voorzitters:		
		prof. dr. Michiel Voskuil, cardioloog UMC Utrecht		
		dr. Ruben Tijssen, AIOS St. Antonius Ziekenhuis		
1	09.00 - 09.10	Impact of Apolipoprotein A-I Infusions on Cardiovascular Events		
		After Acute Myocardial Infarction-MI by Neutrophil-Lymphocyte		
		Ratio and LDL-Cholesterol Levels		
		Sem A.O.F. Rikken St. Antonius Ziekenhuis, Nieuwegein; CARIM,		
		Maastricht; Baim Institute for Clinical Research, Boston)		
2	09.11 - 09.21	Medication Adherence After Myocardial Infarction: Patients'		
		Insights from a Qualitative Interview Study		
		Eline R.Harding (Diakonessenhuis, Utrecht)		
3	09.22 - 09.32 Sex Differences in Cardiac Structure and Function Followin			
		First-Time ST-Segment Elevation Myocardial Infarction		
		Kim W.L.M. Ricken (UMCG, Groningen)		
4	09.33 - 09.43	A Genotype-Guided P2Y12-Inhibitor De-escalation Strategy in		
		Acute Coronary Syndrome: The POPULAR-GUIDE PCI		
		Qiu Ying F. van de Pol (St. Antonius Hospital, Nieuwegein)		
5	09.44 - 09.54	Predicting Occlusive Myocardial Infarction Using Artificial		
		Intelligence-Based Electrocardiogram Interpretation		
		Dino Ahmetagic (Universitair Medisch Centrum Utrecht, Utrecht)		
6	09.55 - 10.05	Colchicine in Cardiovascular Disease: Where Do We Stand Now?		
		Jalina Jannink (UMC Utrecht, Utrecht)		
7	10.06 - 10.16	Predictors for Change in Quality of Life in Patients with Chronic		
		Coronary Syndrome Undergoing PCI		
		Sanne Janssen (Zuyderland Medical Centre, Heerlen)		
8	10.17 - 10.27	The ESC Guidelines for the Management of Acute Coronary		
		Syndromes: Adherence in Daily Clinical Practice		
		Jan-Guus W.J. Boringa (Meander Medical Center, Amersfoort)		



Impact of Apolipoprotein A-I Infusions on Cardiovascular Events After Acute Myocardial Infarction-MI by Neutrophil-Lymphocyte Ratio and LDL-Cholesterol Levels Presenting author: S.A.O.F. Rikken

Department: Cardiology

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K.R. Bainey (University of Alberta Hospital, Edmonton); P.M. Ridker (Brigham and Women's Hospital, Boston); K. W. Mahaffey (Stanford University School of Medicine, Palo Alto); S.J. Nicholls (Victorian Heart Institute, Melbourne); R. Mehran (Zena and Michael A. Wiener Cardiovascular Institute, New York); R. A. Harrington (Weill Cornell Medicine, New York); J. H. Cornel (Noordwest Ziekenhuisgroep, Alkmaar).

Purpose:

The AEGIS-II trial (NCT03473223) evaluated the efficacy of CSL112, a human plasmaderived apolipoprotein A-I (apoA-I) infusion therapy, in reducing cardiovascular events following acute myocardial infarction (AMI). Given CSL112's potential anti-inflammatory effects, we conducted an exploratory post-hoc analysis to assess whether its efficacy was related to baseline neutrophil-lymphocyte ratio (NLR), a marker of systemic inflammation. and low-density lipoprotein cholesterol (LDL-C) levels.

Methods:

In total, 18,219 participants with AMI, multivessel coronary artery disease, and additional cardiovascular risk factors were randomized to four weekly infusions of 6 g CSL112 or placebo. The primary endpoint was a composite of cardiovascular death, myocardial infarction, or stroke (MACE). For this analysis, the risk for the primary endpoint was assessed by dichotomized baseline NLR (>median vs. ≤median) using Cox proportionalhazards models. A treatment interaction was added to the model to explore the effects of CSL112 across different NLR and dichotomized LDL-C levels (≥100 mg/dL vs. <100 mg/dL).

Results:

Among 15,966 participants, those with baseline NLR >median (3.3, N=7,983) had a significantly greater risk of MACE at 90 days (HR 1.40; 95% CI, 1.21–1.63), persisting at 180 and 365 days. In participants with both elevated NLR and LDL-C ≥100 mg/dL, CSL112 reduced MACE compared to placebo at 90 days (HR 0.63; 95% CI, 0.42-0.93), with sustained benefit at 180 and 365 days. Participants with elevated NLR and LDL-C <100 mg/dL, or lower NLR and regardless of LDL-C levels, had no significant reduction in MACE.



A significant interaction between treatment and NLR was noted at 180 days (p for interaction=0.01), and among treatment, NLR, and LDL-C at 180 days (p for interaction=0.03).

Conclusion:

The present analysis confirms that elevated NLR serves as a predictor of MACE post-AMI and showed an associated reduction in cardiovascular events with the use of CSL112 in patients with combined elevated NLR and LDL-C \geq 100 mg/dL.

Keywords:

Apolipoprotein A-I, CSL112, neutrophil-lymphocyte ratio

Figure:

Cumulative incidence of a composite of cardiovascular death, myocardial infarction, or stroke in participants with (A) higher (>median) vs. lower (≤median) neutrophil-lymphocyte ratio (NLR) and (B) both higher NLR and LDL-C ≥100 mg/dL, treated with CSL112 vs. placebo over 365 days.







Medication Adherence After Myocardial Infarction: Patients' Insights from a Qualitative Interview Study

Presenting author: E.R.Harding Department: Cardiology

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Purpose:

Many patients fail to adhere to medication after myocardial infarction (MI), increasing their risk of recurrent cardiovascular events. This study aims to assess self-reported medication adherence after MI and to explore drivers influencing adherence.

Methods:

This convergent parallel mixed-methods study prospectively enrolled patients ≥18 years with MI in a medium sized teaching hospital from August 2024 until now. They completed a questionnaire two weeks and four months post-MI. Quantitative data on self-reported adherence and attitudes towards medicines was assessed by the Medication Adherence Report Scale(MARS-5, range 5-25) and the Beliefs about Medicines Questionnaire(BMQ), respectively. A MARS-5 score ≥23 indicated high adherence. Qualitative data on beliefs about medicines was explored using open-ended questions.

Results:

37 patients (mean age 67 years(\pm 11), 32% female) completed the questionnaire two weeks post-MI. All patients had a MARS-5 score≥23 and 2 patients(5%) unintentionally deviated from their medication regimen once. Most patients(60%) exhibited an accepting attitude towards prescribed medicines, while the rest were ambivalent(27%), sceptical(5%) or indifferent(8%). The most important facilitator for adherence, reported by 41% of patients, is the belief that medication is essential for maintaining health. Accordingly, 73% of patients suggested that improved communication and education by healthcare providers would enhance adherence.

Conclusion:

: Shortly after MI, medication adherence seems to be high, driven by intrinsic belief in its importance for their health in which education by healthcare providers plays a major role. Currently, adherence data four months post-MI is being collected. Investigating and subsequently tackling the barriers of adherence is important for reducing cardiovascular events and healthcare costs.

Keywords:

Medication adherence, Myocardial infarction, Mixed-methods



Sex Differences in Cardiac Structure and Function Following First-Time ST-Segment Elevation Myocardial Infarction

Presenting author: K.W.L.M. Ricken Department: Cardiology

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Purpose:

Sex differences in STEMI presentation and outcomes are well-documented, yet little is known about post-STEMI changes in cardiac structure and function in the era of early PCI. This study examines sex-specific differences in echocardiographic changes following first-time STEMI.

Methods:

We included non-diabetic first-time STEMI patients. Echocardiographic parameters were assessed during hospitalization and at 4 months. Adverse remodelling was defined as a \geq 20% increase in left ventricular end-diastolic volume (LVEDV). Functional parameters included left ventricular ejection fraction (LVEF), wall motion score index (WMSI), and left ventricle and atrial strain. Left ventricular geometry patterns were assessed at 4 months. **Results:**

A total of 379 patients (95 women, 284 men) were included. Women had a similar age (59.9 vs. 57.8 years, p=0.138) but a higher prevalence of hypertension (42% vs. 25.6%, p=0.004), lower hemoglobin levels (8.40 vs. 9.10 mmol/L, p<0.001), and higher NT-proBNP concentrations at admission (132 vs. 67 ng/L, p<0.001) and after 24 hours (1322 vs. 784 ng/L, p<0.001). No significant difference in LV geometry patterns (eccentric or concentric) were observed between sexes at 4 months (p=0.21). Adverse LV remodelling was similar between both groups at approximately 22-23% (p=0.991). Women had smaller cardiac dimensions, lower LAVI, higher E/e' ratios, and greater LVEF at both timepoints. However, the progression of echocardiographic parameters over the 4-month period did not differ significantly between sexes.

Conclusion:

Despite baseline differences in patient characteristics and individual echocardiographic parameters, no sex-based disparities were found in LV geometry, adverse remodelling, or changes in cardiac structure or function between admission and 4 months.

Keywords:

Sex Differences, STEMI, Cardiac remodelling



Figure:

Graphical abstract: Comparison of men and women in (1) structural and (2) functional echocardiographic differences at baseline, and (3) sex-specific changes in these structural and functional parameters over 4 months.

Abbreviations: LVEDD, Left Ventricular End-Diastolic Diameter; LVESD, Left Ventricular End-Systolic Diameter; LAV, Left Atrial Volume; LAVI, Left Atrial Volume Index; LVEF, Left Ventricular Ejection Fraction; WMSI, Wall Motion Score Index; E/e' ratio, Ratio of Early Diastolic Transmitral Flow Velocity to Early Diastolic Mitral Annular Velocity; GLS, Global Longitudinal Strain



Figure legend: \blacktriangle higer compared to other sex, \forall lower compared to other sex, = no significant difference between both sexes.



Session 1: Coronary heart disease & risk prediction Abstract 4

A Genotype-Guided P2Y12-Inhibitor De-escalation Strategy in Acute Coronary Syndrome: The POPULAR-GUIDE PCI

Presenting author: Q.Y.F. van de Pol Department: Cardiology

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Purpose:

Currently, patients with acute coronary syndrome (ACS) receive standard dual antiplatelet therapy with a potent P2Y12 inhibitor and aspirin. One de-escalation strategy to balance the ischemic an bleeding risk in these patients, is switching the potent P2Y12 inhibitor to clopidogrel. However, clopidogrel activation depends on the CYP2C19 enzyme. Genetic testing for the CYP2C19 genotype, which encodes the CYP2C19 enzyme, identifies patients with decreased clopidogrel metabolism due to 1 or 2 loss of function (LOF) alleles. This enables tailored antiplatelet treatment. The objective of the study is to evaluate the safety and efficacy of routine genetic testing for guiding antiplatelet therapy in a real-world ACS population.

Methods:

The POPular GUIDE PCI was an initiative within the ongoing FORCE-ACS (Future Optimal Research and Care Evaluation in Patients with Acute Coronary Syndrome) Registry (NCT03823547). The POPular GUIDE PCI is an observational, multicentre, prospective implentation study including nine non-interventional and interventional cardiac centres located in the NetherlandsIn this prospective, multicenter implemenation study, patients were divded into a standard care cohort, where antiplatelet therapy was prescribed at the physician's discretion and a genotype-guided cohort. In the genotype-guided cohort, physicians were recommended to switch to clopidogrel in noncarriers of the CYP2C19 loss of function alleles during hospital admission. The primaryy endpoins were major adverse cardiac events (MACE), defined as a composite of cardiovascular death, mycardial infartion, or stroke, and major or non-major clinically relevant bleeding at one year follow-up.



Results:

A total of 9,907 patients were included in the analysis. Of these, 1,208 (12%) were included in the genotype-guided cohort, while 8,699 (88%) were assigned to the standard care cohort. MACE occurred in 107 patients (8.9%) in the genotype-guided cohort and 897 patients (10.3%) in the standard care cohort (adjHR 1.05; 95% CI 0.85-1.29; P = 0.64). Major or nonmajor clinically relevant bleeding was reported in 146 patients (12.1%) in the genotypeguided cohort compared to 1,384 patients (15.9%) in the standard care cohort (adjHR 0.79; 95% CI 0.67–0.94; P = 0.01).

Conclusion:

In patients with ACS requiring antiplatelet therapy, implementing a CYP2C19 genotypeguided de-escalation strategy in clinical practice significantly reduced major and non-major clinically relevant bleeding compared to standard care at 12 months, without increasing ischaemic events.

Keywords:

Acute coronary syndrome, Dual antiplatelet therapy, Genotype-guided therapy

Figure:

Supplementary Figure 2. Kaplan-Meier curves after propensity score matching for cumulative incidence of (A) the primary ischemic endpoint (cardiovascular mortality, myocardial infarction, or stroke), showing similar event rates between the genotype-guided cohort (blue) and standard care cohort (red), and (B) the primary bleeding endpoint (BARC 2, 3, or 5 bleeding).





Predicting Occlusive Myocardial Infarction Using Artificial Intelligence-Based Electrocardiogram Interpretation

Presenting author: D. Ahmetagic Department: Cardiology

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Purpose:

There is increasing awareness that identifying occlusive myocardial infarction (OMI) in patients without ST-elevation remains inadequate. Diagnosis is challenging due to subtle electrocardiogram (ECG) abnormalities. These can be detected reproducibly using artificial intelligence (AI). Therefore, we developed and validated an AI–based algorithm to predict OMI using ECG data.

Methods:

We analyzed ECGs from patients presenting with chest pain at the emergency department, cardiac care unit or catheterization laboratory of the University Medical Center Utrecht. ECGs were obtained \leq 72 hours after presentation and, when performed, before coronary angiography. All patients had troponin measurements. The training set included ECGs meeting these criteria, while a separate test cohort used each patient's first ECG. There was no patient overlap between sets. We defined OMI as a culprit vessel with Thrombolysis in Myocardial Infarction (TIMI) flow 0–2. A convolutional neural network was trained to predict OMI from ECG data.

Results:

The model was trained on 13,541 ECGs from 5,118 patients and tested on 640 ECGs (median age 59 [IQR: 47–70], 55.9% male). OMI was present in 47 patients (7.3%), of whom 35% had a NSTEMI. Our algorithm achieved an area under the receiver operating characteristic curve of 0.79 (95% CI: 0.71-0.86), a sensitivity of 65% (95% CI: 52% - 78%), and a specificity of 72% (95% CI: 68% - 76%).

Conclusion:

We developed a convolutional neural network capable of predicting OMI using ECG data. With further validation, this model could assist triaging patients with chest pain in the prehospital setting.

Keywords:

Electrocardiogram, Occlusive myocardial infarction, Artificial intelligence



Colchicine in Cardiovascular Disease: Where Do We Stand Now?

Presenting author: J. Jannink Department: Vascular Medicine

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Purpose:

The potential role of low-dose colchicine in atherosclerotic vascular disease has been explored in multiple clinical trials. This review aims to provide an overview of the current evidence regarding the effect of colchicine in the secondary prevention of cardiovascular disease in patients with coronary artery disease or stroke.

Methods:

This review provides an overview of randomized trials comparing colchicine to no colchicine for the secondary prevention of atherosclerotic cardiovascular disease. A study-level metaanalysis was conducted to assess the effect of colchicine in patients with known coronary artery disease or stroke. The primary outcome was a composite of myocardial infarction, stroke and cardiovascular death. Secondary outcomes included all-cause mortality.

Results:

Nine trials, including 30,659 patients (15,255 receiving colchicine, 15,404 receiving no colchicine) with a history of coronary artery disease or stroke were included. Patients randomized to colchicine had a relative risk of 0.88 (95% confidence interval (CI) 0.81-0.95, p = 0.002; 9 trials) compared to no colchicine for the primary composite outcome. In patients with coronary disease the relative risk was 0.85 (95% CI 0.75-0.95, p = 0.097; 5 trials). In patients with a history of stroke the relative risk was 0.91 (95% Cl 0.80-1.03, p = 0.233; 2)trials). All-cause mortality did not differ between treatment groups.

Conclusion:

In patients with a history of coronary artery disease or stroke, colchicine was associated with a 12% reduction of the composite outcome of cardiovascular death, myocardial infarction or stroke when compared to placebo or no colchicine. No differences in all-cause mortality between groups was observed.

Keywords:

Colchicine, Inflammation, Cardiovascular disease



Predictors for Change in Quality of Life in Patients with Chronic Coronary Syndrome Undergoing PCI

Presenting author: S. Janssen Department: Cardiology

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Purpose:

In patients with chronic coronary syndrome (CCS), percutaneous coronary intervention (PCI) is performed to relieve symptoms of angina pectoris and to improve quality of life (QoL) after optimal medical therapy. This study aimed to ascertain whether the general CCS population reported improved QoL one year after PCI. In addition, it aimed to identify patient-related characteristics associated with no improvement of QoL.

Methods:

Data were derived from the Southeast Netherlands Heart Registry (ZON-HR), an ongoing, multicenter PCI registry. Patients with complete 36-Item Short Form Health Survey (SF36-v2) data at baseline and 1-year after PCI were included. Scores were subdivided into a physical health (PH) component and mental health (MH) component. The associations with baseline characteristics were examined using univariable binary logistic regression.

Results:

Repeated SF36-v2 data were available for 329 patients. One year after PCI, PH improved in 58.1% of patients and MH in 55.9% of patients. Patients with peripheral artery disease (PAD) had a 1.9x higher chance of no improvement of PH compared to patients without PAD (OR=1.939, 95% CI: 1.001-3.757). In addition, diabetes, male sex, a previous myocardial infarction, active smoking, and obesity showed a trend towards no PH improvement one year after PCI (Figure 1).

Conclusion:

This study showed that just over half of CCS patients reported improved QoL one year after PCI. In addition, PAD was associated with the absence of improvement in the physical component of QoL. Further research should focus on identifying characteristics of CCS patients who may derive less benefit from PCI.

Keywords:

Quality of Life, Chronic Coronary Syndrome, Physical Health



Figure:

Figure 1: Forest plot of odds ratios of absence of improvement in physical health 1 year after PCI based on baseline characteristics.

PCI, percutaneous coronary intervention; PAD, peripheral artery disease; MI, myocardial infarction; OR, odds ratio; CI, confidence interval.





The ESC Guidelines for the Management of Acute Coronary Syndromes: Adherence in Daily Clinical Practice

Presenting author: J.W.J. Boringa Department: Cardiology

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Purpose:

The guidelines aim to support cardiologists in daily practice with new knowledge. However, evidence from previous studies shows suboptimal adherence to cardiovascular prevention guidelines. This study examines to what extent cardiologists from Meander Medical Center in Amersfoort adhere to the Acute Coronary syndrome(ACS) treatment guidelines of the European Society of Cardiology(ESC) during ACS hospitalization.

Methods:

A prospective observational study was conducted at Meander Medical Center, Amersfoort, from September 2 2024 to October 31 2024. The study focused on ESC Class IA, IB, and IC recommendations ("indicated"). Class IIa ('should be considered') and IIb ('may be considered') recommendations were included only if relevant to the study objectives. Patients were assessed for optimal therapy across six key pillars: (I) lipid management, (II) inflammation management, (III) antithrombotic therapy, (IV) hemodynamic management (subdivided into hypertension and heart failure), (V) Type II diabetes management, and (VI) lifestyle management.

Results:

A total of 106 patients were included (mean age 66 ± 13 years, 33 (37%) women). Optimal therapy adherence across all six pillars was 24%. Adherence rates for individual pillars were as follows: lipid management; 33%, inflammation management; 22%, antithrombotic management; 100%, hypertension management; 81%, heart failure management; 67%, Type II diabetes management; 65%, and lifestyle management; 88%

Conclusion:

Adherence to the ESC guidelines for ACS treatment during hospitalization was suboptimal. Only 24% of patients received optimal therapy across all six therapeutic pillars. This study lends support to efforts to improve practice during ACS admission, when patients are most susceptible to interventions

Keywords:

Acute coronary syndrome, Guidelines, Adherence



Figure:

Adherence to ESC guidelines in 106 consecutive ACS patients (no. and (%)).				
Ι.	Lipids, LDL target 1.4 mmol/l achieved	35 (33)		
П.	Ant-inflammatory therapy initiated	6/27 (22)		
III.	Antithrombotic			
	 Dual antiplatelet therapy (DAPT) 	106 (100)		
	 Eligible patients who received advice to shorten DAPT duration 	3 (9)		
IV.	Hemodynamic			
	 Hypertension (RR above 130/80 mmHG) 	86 (81)		
	 Heart Failure (initiation of guideline directed medical therapy) 	6/9 (67)		
V.	Diabetes Mellitus Type II optimal therapy	15/23 (65)		
VI.	Lifestyle management	88 (83)		
	 Flu vaccinations 	106 (100)		
	 Quit smoking conversation 	8/35 (23)		
Acros	ss all six pillars.	25 (24)		