Abstract sessies NVVC Voorjaarscongres
Donderdag 20 april 2023
15:00 – 16:30 uur

Beste voorzitters,

Graag de winnaar van uw sessie omcirkelen en dit formulier overhandigen aan de hostess in uw zaal.

Bij voorbaat dank!

SESSIE 4: INTERVENTION I

Zaal: Cambridge 30	Voorzitters: dr. Jacobijne Wiersma, cardioloog, Dijklander Ziekenhuis en drs. Cyril Camaro, cardioloog, Radboudumc
Spreker 1:	**Bleeding Outcomes after Percutaneous Coronary Intervention According to a Simplified Risk Model and to Personalized Antiplatelet Treatment in the South East of the Netherlands** *Eva Woelders (Radboud University Medical Centre, Nijmegen)*
Spreker 2:	**Impact of Cardiac History and Myocardial Scar on Increase of Myocardial Perfusion after Revascularization** *Ruurt Jukema (Amsterdam University Medical Centers, Amsterdam)*
Spreker 3:	**Long Term Results of Alcohol Septal Ablation (ASA) in Patients with Hypertrophic Obstructive Cardiomyopathy (HOCM)** *Pascal Juliea (St.Antonius, Nieuwegein)*
Spreker 4:	**Prophylactic Impella CP versus VA-ECMO in Patients Undergoing Complex High-risk Indicated PCI** *Deborah van den Buijs (Ziekenhuis Oost-Limburg, Genk)*
Spreker 5:	**Long-term Clinical Outcome of Paclitaxel-Coated Balloon Angioplasty versus Drug-eluting Stent in Acute Myocardial Infarction: Five-year Follow-up of the Revelation study** *Sander Niehe (OLVG, Amsterdam); N.S. Vos (OLVG, Amsterdam)*
Spreker 6:	**The Clinical Implementation of CYP2C19 Genotyping in Patients with an Acute Coronary Syndrome: Insights from the FORCE-ACS Registry** *Jaouad Azzahhafi (Sint Antonius Ziekenhuis, Nieuwegein)*
Spreker 7:	**Impact of Recurrent Ischemic and Bleeding Events on Quality of Life in Acute Coronary Syndrome Patients: Insights from the FORCE-ACS Registry** *Niels van der Sangen (Amsterdam UMC, Amsterdam)*
Spreker 8:	**Conservative versus Invasive Management of Elderly Patients with Non-ST-elevation Myocardial Infarction** *Wout van den Broek (St. Antonius Ziekenhuis, Nieuwegein)*

Bleeding Outcomes after Percutaneous Coronary Intervention According to a Simplified Risk Model and to Personalized Antiplatelet Treatment in the South East of the Netherlands

Presenting author: E.C.I. Woelders
Department: cardiologie

E.C.I. Woelders (Radboud University Medical Centre, Nijmegen); E.C.I. Woelders (Radboud University Medical Centre, Nijmegen); D.A.M. Peeters (Radboud University Medical Centre, Nijmegen); J.J.P. Luijkx (Zuyderland Medical Centre, Heerlen); P. J.C. Winkler (Zuyderland Medical Centre, Heerlen); P. Damman (Radboud University Medical Centre, Nijmegen); W. Remkes (VieCuri Medical Centre, Venlo); A.W.J. van 't Hof (Maastricht University Medical Centre, Maastricht); R.J.M. van Geuns (Radboud University Medical Centre, Nijmegen); on behalf of the ZON-HR registry investigators*

Purpose:
We evaluated the predictive value of a simplified model for bleeding risk to patient-tailor dual antiplatelet therapy (DAPT), and assessed the effect of shortened DAPT in patients with high bleeding risk (HBR).

Methods:
In the "Zuid Oost Nederland Hart Registratie" (ZON-HR), multiple centres for percutaneous coronary intervention (PCI) collect patient and PCI characteristics, medication use and outcomes. HBR was defined by 4 factors (figure 1.). In patients with HBR, the ZON-HR advices to shorten DAPT duration to reduce bleeding outcomes. Regression analysis was performed using 1 year outcomes.

Results:
One year follow-up was completed in 1384 of the 3996 included patients. 15% used oral anticoagulants (OAC) at baseline and 10% of patients had HBR. In the first year of the registry the protocol for short DAPT was followed in 16% which increased to 34% in the second year. The number of bleedings was significantly higher in HBR versus no HBR (p log rank = 0.0062; HR 1.91, 95% CI 1.12-3.27). However, most outcomes occurred in the first month and a landmark analysis showed no difference after one month (figure 1.). In patients with HBR. shortened DAPT showed no reduction of bleeding events.

Conclusion:
In the ZON-HR registry, a simplified risk model showed significant predictive value for bleeding outcomes which is driven by events in the first month. This suggests that this model could be used to guide personalized DAPT, which seems feasible as adherence to the protocol shows improvement over time. However, so far shortened DAP showed no effect on outcomes.

Keywords:
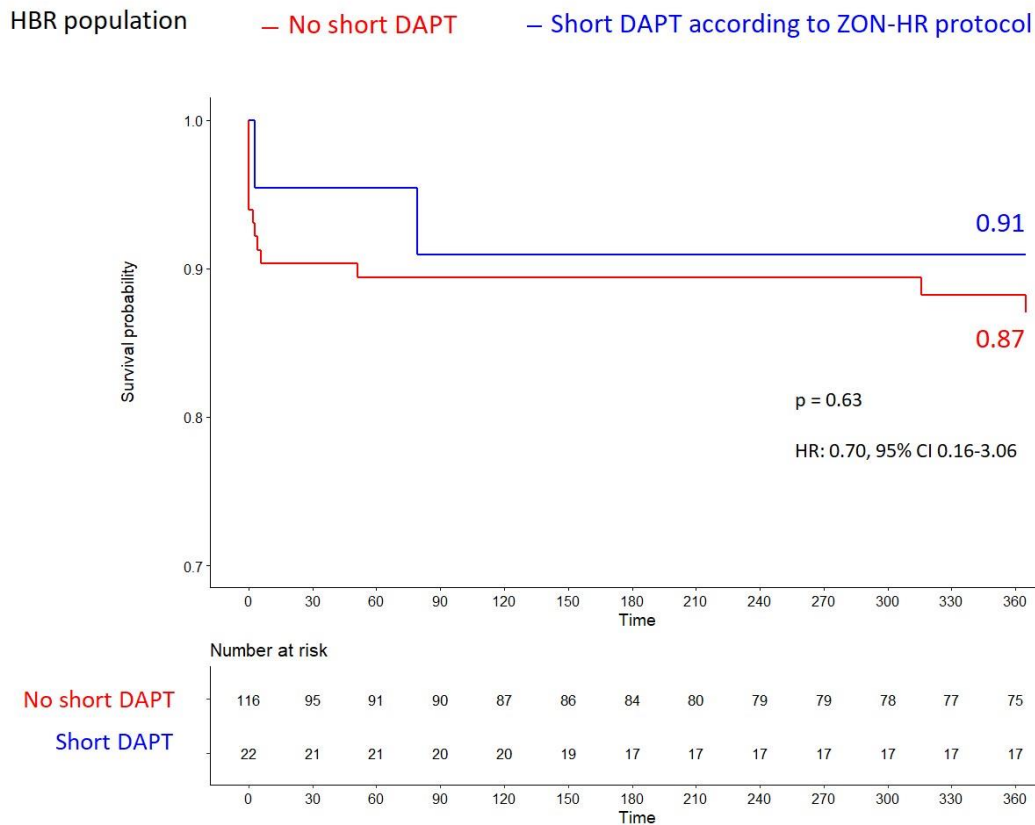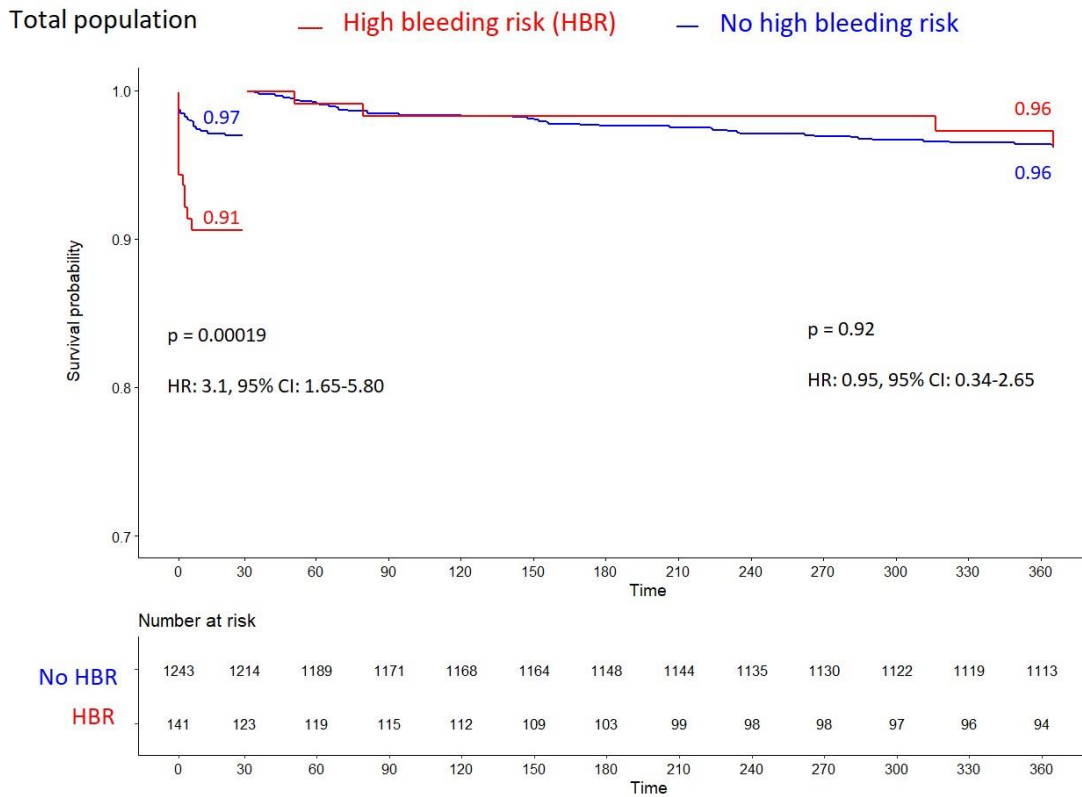HBR, PCI, DAPT

Figure:
Figure 1.
Survival till BARC 2, 3 or 5 bleeding events according to bleeding risk & adherence to protocol for short DAPT duration in patients with high bleeding risk.
DAPT: Dual antiplatelet therapy; HR: Hazard Ratio; CI: Confidence Interval; HBR: High Bleeding Risk
Definition HBR: History of ICH or BARC ≥ 2 bleeding <12 months or eGFR <30 or Hb <7 mmol/L)

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Total population — High bleeding risk (HBR) — No high bleeding risk

0.97
0.96
0.91
0.96

p = 0.00019
HR: 3.1, 95% CI: 1.65-5.80

p = 0.92
HR: 0.95, 95% CI: 0.34-2.65

Number at risk

	0	30	60	90	120	150	180	210	240	270	300	330	360
No HBR	1243	1214	1189	1171	1168	1164	1148	1144	1135	1130	1122	1119	1113
HBR	141	123	119	115	112	109	103	99	98	98	97	96	94

HBR population — No short DAPT — Short DAPT according to ZON-HR protocol

0.91
0.87

p = 0.63
HR: 0.70, 95% CI 0.16-3.06

Number at risk

	0	30	60	90	120	150	180	210	240	270	300	330	360
No short DAPT	116	95	91	90	87	86	84	80	79	79	78	77	75
Short DAPT	22	21	21	20	20	19	17	17	17	17	17	17	17

Impact of Cardiac History and Myocardial Scar on Increase of Myocardial Perfusion after Revascularization

Presenting author: R.A. Jukema
Department: Cardiology

R. Jukema (Amsterdam University Medical Centers, Amsterdam); R. de Winter (Amsterdam University Medical Centers, Amsterdam)*; L. Hopman (Amsterdam University Medical Centers, Amsterdam); R. Driessen (Amsterdam University Medical Centers, Amsterdam); P. van Diemen (Amsterdam University Medical Centers, Amsterdam); Y. Appelman (Amsterdam University Medical Centers, Amsterdam); J. Twisk (Amsterdam University Medical Centers, Amsterdam); N. Planken (Amsterdam University Medical Centers, Amsterdam); P. Raijmakers (Amsterdam University Medical Centers, Amsterdam); P. Knaapen (Amsterdam University Medical Centers, Amsterdam); I. Danad ((Amsterdam University Medical Centers, Amsterdam/University Medical Center Utrecht, Utrecht)
share first authorship

Purpose:
Coronary revascularization is aimed to restore myocardial perfusion and reduce symptoms. Yet, data on the restoration of myocardial perfusion in patients with a prior cardiac history is scarce. The goal of this study is to assess the impact of coronary revascularization on myocardial perfusion and fractional flow reserve (FFR) in patients with and without a cardiac history. Furthermore, we studied the impact of scar tissue.

Methods:
Symptomatic patients underwent [15O]H2O positron emission tomography (PET) and FFR before and after revascularization. Patients with a cardiac history, defined as prior myocardial infarction or percutaneous coronary intervention, underwent scar quantification by magnetic resonance imaging late gadolinium enhancement.

Results:
Among 137 patients (87% male, age 62.2±9.5 years) 84 (61%) had a cardiac history. The increase in hMBF and FFR following revascularization was smaller in patients with a cardiac history compared to patients without (0.58±0.87 vs 0.91±0.96 ml/min/g and 0.22±0.13 vs 0.31±0.18, $p < 0.01$ and $p = 0.02$, respectively). An increase in FFR was strongly associated to hMBF increase in patients with and without a cardiac history ($r = 0.60$ and $r = 0.62$, $p < 0.01$ for both). Similar results were found for coronary flow reserve. There was no independent correlation between the percentage of scar tissue and myocardial perfusion improvement.

Conclusion:
Patients without a cardiac history demonstrated a greater perfusion improvement following revascularization. FFR increase after revascularization was paralleled by a perfusion increase. Scar burden did not independently affect restoration of perfusion.

Keywords:
Revascularization, FFR, Perfusion

Long Term Results of Alcohol Septal Ablation (ASA) in Patients with Hypertrophic Obstructive Cardiomyopathy (HOCM)

Presenting author: P.T.S. Juliea
Department: Cardiology

S. Hubbers (St.Antonius, Nieuwegein); *S. Hubbers (St.Antonius, Nieuwegein); P.T.S. Juliea (St.Antonius, Nieuwegein); B. Kara (St.Antonius, Nieuwegein); J.M. Ten Berg (St.Antonius, Nieuwegein)*

Purpose:
The main endpoint of the study was to assess the long-term survival of our patients. Additionally, we analyzed our data for possible predictors for mortality, need for implantation of ICD/PM and second septal reducing procedure.
Methods:
This research was an observational retrospective single center registry study. Patients who have undergone ASA between January 2000 and January 2018 at the St. Antonius hospital in Nieuwegein were registered into a database.
Results:
285 patients were included in the database. The mean age at baseline was 65.5 years. The mean NYHA class and CCS class were 2.82 and 0.6 respectively. The mean left ventricle outflow tract (LVOT) gradient was 58.7 mmHg at baseline and 108.4 mmHg after provocation. The mean follow-up time was 9.2 years. 80 of the 285 patients died during follow-up. There was a rate 5.3% of (aborted) sudden cardiac death (SCD) during follow-up. The mean NYHA class and CCS class decreased to 1.58 and 0.2 respectively. 11.6% of patients needed a second procedure for septal reduction.
**Conclusion:**
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In these patients undergoing ASA for HOCM, the 10-year survival for all-cause mortality was 77% and 78.8% of patients had an improvement of ≥1 NYHA class. There was a relatively little need for periprocedural ICD implantations. The SCD rate in our population was 2.5% with an (aborted) SCD rate of 5.3%. We conclude that in patients with HOCM treated in the St. Antonius hospital, ASA is a safe procedure with few serious complications, of which the majority consist of transient AV block.

Keywords:
Alcohol septal ablation, Hypertrophic obstructive cardiomyopathy, Prognosis

Figure:
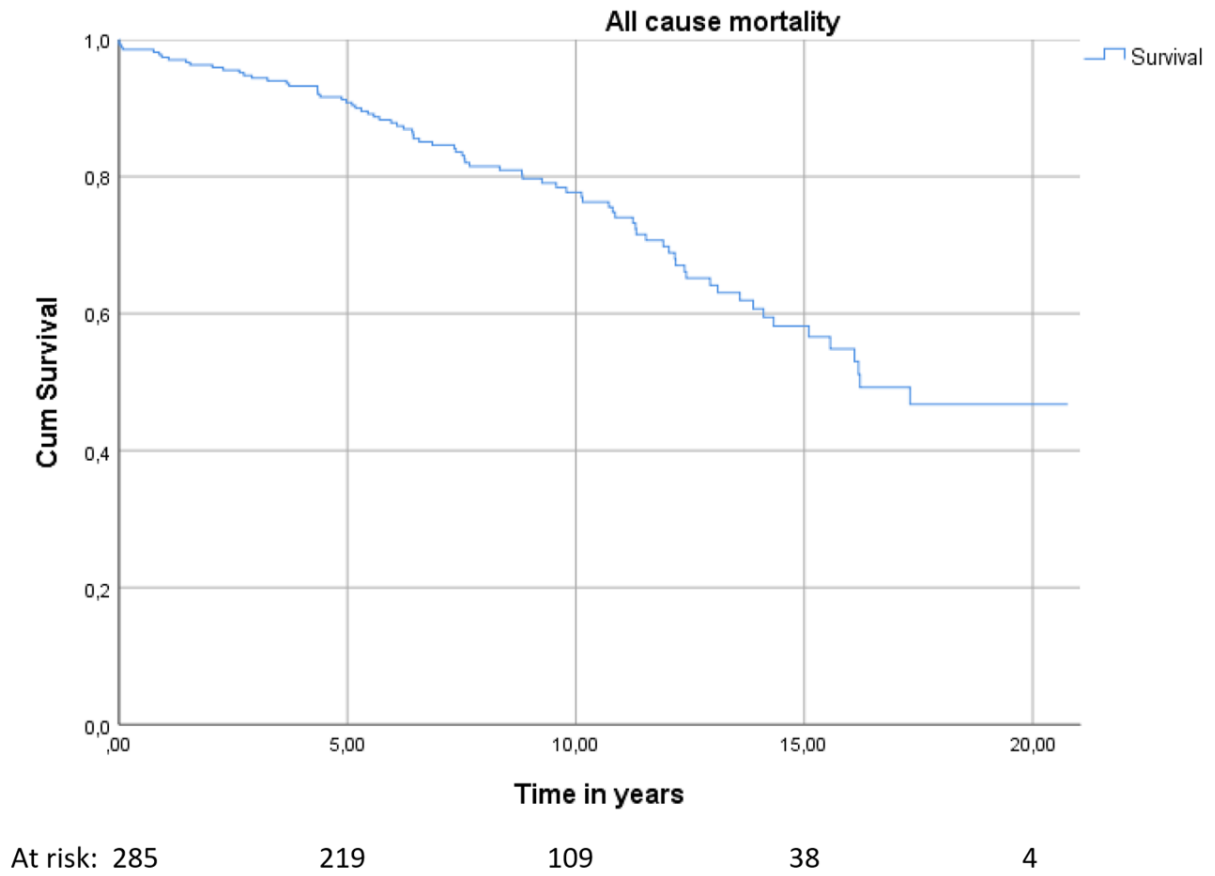
Prophylactic Impella CP versus VA-ECMO in Patients Undergoing Complex High-risk Indicated PCI

Presenting author: D.M.F. van den Buijs
Department: Cardiologie

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Purpose:
To prevent hemodynamic instability in complex high risk indicated PCI (CHIP), various mechanical circulatory support (MCS) systems are available. However, comparable data on different forms of MCS are not at hand. This multicenter observational study aimed to compare two different forms of MCS in CHIP: the Impella CP system and veno-arterial extracorporeal membrane oxygenation (VA-ECMO).

Methods:
In this multicenter observational study, we retrospectively evaluated all CHIP procedures between 2017 and 2020 with support of an Impella CP or VA-ECMO, who were declined surgery by the heart team. Major adverse cardiac events (MACE), mortality at discharge and 30-day mortality was evaluated.

Results:
A total of 41 patients were included, of which 27 patients were supported with Impella CP and 14 patients with VA-ECMO. Baseline characteristics were well balanced in both groups. No significant difference in peri-procedural hemodynamic instability was observed between both groups (3.7% vs. 14.3%; p = 0.22). Composite outcome of MACE showed no significant difference (30.7% vs. 21.4%; p=0.59). Bleeding complications were higher in the Impella CP group, but showed no significant difference (22.2% vs. 7.1%; p=0.22) and occurred more at the non-Impella access site. In-hospital mortality was 7.4% in the Impella CP group versus 14.3% in the VA-ECMO group and showed no significant difference (p=0.48). 30-Day mortality showed no significant difference (7.4% vs. 21.4%; p=0.09).

Conclusion:
In patients with CHIP, there were no significant differences in hemodynamic instability and overall MACE between VA-ECMO or Impella CP device as mechanical circulatory support. Based on this study, the choice of either VA-ECMO or Impella CP does not alter outcome.

Keywords:
High-risk PCI, Mechanical circulatory support,

Figure:
Table: Procedural Characteristics and Outcome.
ICU = intensive care unit; MACE = major adverse cardiovascular events; PCI = percutaneous coronary intervention

Procedural Characteristics and Outcome	Impella CP (n = 27)	VA-ECMO (n = 14)	P-value
Hemodynamic instability	1 (3.7%)	2 (14.3%)	0.22
Peri-procedural mortality	0 (0%)	0 (0%)	1.00
Mortality at discharge	2 (7.4%)	2 (14.3%)	0.48
Mortality at 30 days	2 (7.4%)	2 (21.4%)	0.09
MACE at 30 days	10 (37.0%)	4 (21.4%)	0.59
Bleeding complications (BARC ≥3)	6 (22.2%)	1 (7.1%)	0.22
Grade 3A	4 (14.8%)	0 (0%)	0.12
Grade 3B	2 (7.4%)	1 (0%)	0.98
Access site related	2 (7.4%)	0 (0%)	0.30
Limb ischemia	0 (0%)	0 (0%)	1.00
Successful revascularization	25 (92.6%)	14 (100%)	0.47
Renal function post-procedural (increase ≥1 stage above baseline)	4 (14.8%)	3 (21%)	0.80
Hb prior to PCI (mmol/l)	7.7 (5.3-9.9 +/- 1.2)	8.3 (6.9-9.8 +/-0.93)	0.13
Hb post PCI (mmol/l)	6.7 (5.2-8.6 +/- 1.1)	6.4 (5.1-7.5 +/-0.76)	0.35
Transfer to ICU	5 (18.5%)	0 (0%)	0.06
Mean stay in ICU (days)	1 (1-1 +/- 1)	0 (0-0 +/-0)	N/A
Mean stay in Hospital (days)	3 (1-23 +/- 4.76)	7 (2-28 +/- 7.2)	0.23

Long-term Clinical Outcome of Paclitaxel-Coated Balloon Angioplasty versus Drug-eluting Stent in Acute Myocardial Infarction: Five-year Follow-up of the Revelation study

Presenting author: S.R. Niehe
Department: Cardiologie

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Purpose:
In the randomized REVELATION trial a drug-coated balloon (DCB) strategy was compared to a drug-eluting stent (DES) in the setting of ST-segment elevation myocardial infarction (STEMI). A DCB strategy was shown to be non-inferior to a DES strategy in terms of fractional flow reserve assessed at 9 months and with sustained safety and feasibility after 2 years. In this article we present the long-term clinical outcome of this treatment strategy.

Methods:
In this single centre study, a total of 120 patients presenting with STEMI, with a non-severely calcified culprit lesion in a native coronary artery and a residual stenosis of <50% after predilatation, were randomized to treatment with a DCB or DES between October 2014 and November 2017.

Results:
Complete clinical follow-up at two years was available for 107 patients (89.2%) and vital status was available for all patients.
A major adverse cardiac event (MACE) defined as cardiac death, recurrent myocardial infarction (MI), or target-lesion revascularization (TLR), occurred in 3 patients (5.0%) in the DCB-group and 2 patients (3.3%) in the DES-group, respectively (HR 1.39, 95% CI 0.23 - 8.29, p=.720). Between 2 and 5 years only one new event occurred (MI), in a patient randomized to DES

Conclusion:
In this randomized study clinical outcome after 5 years was excellent with sustained safety and comparable between DCB and DES in selected patients presenting with STEMI, with sustained safety and feasibility of DCB strategy
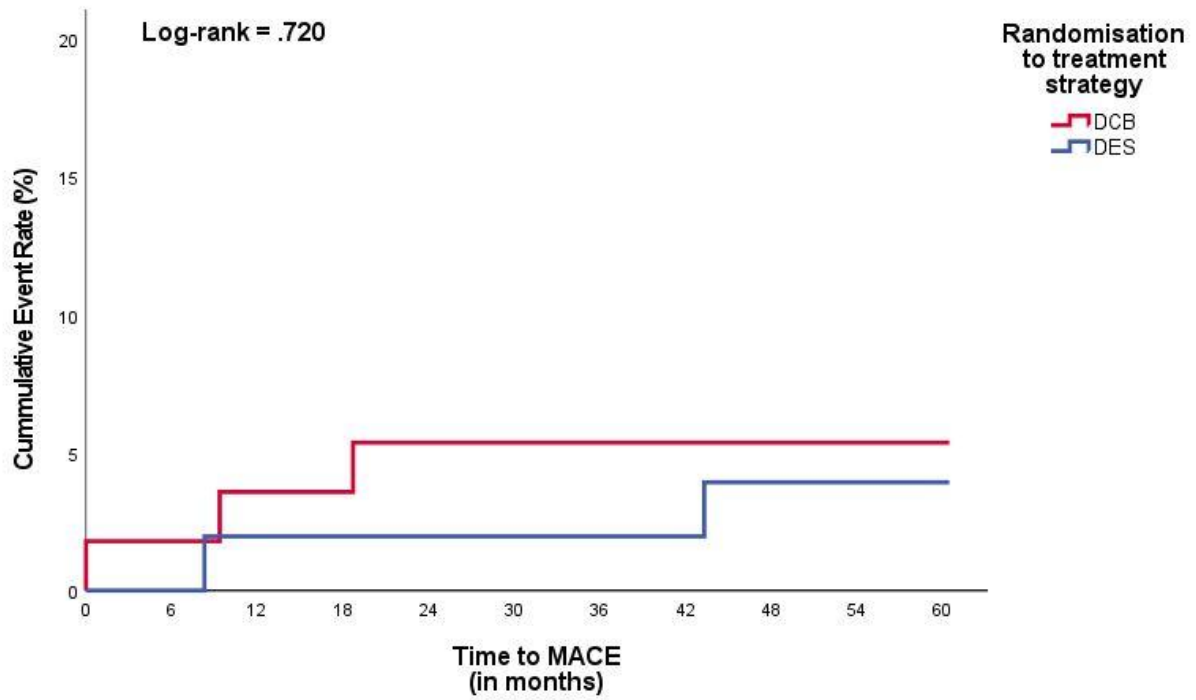
Keywords:
Drug-coated balloon, Drug-eluting stent, STEMI

Figure:

Figure 1. Five-year Kaplan-Meier curve for major adverse cardiovascular event (MACE) per drug-coated balloon (DCB) and drug-eluting stent (DES) strategies.

The Clinical Implementation of CYP2C19 Genotyping in Patients with an Acute Coronary Syndrome: Insights from the FORCE-ACS Registry

Presenting author: J. Azzahhafi
Department: Cardiology

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Purpose:
Current guidelines recommend prasugrel and ticagrelor in patients undergoing percutaneous coronary intervention (PCI), however these potent P2Y12-inhibitors are associated with a higher bleeding risk when compared to clopidogrel. The study aimed to assess the feasibility of a CYP2C19 genotype-guided de-escalation strategy in acute coronary syndrome (ACS) patients treated with dual antiplatelet therapy.
Methods:
ACS patients receiving genotype-guided antiplatelet therapy from August 2021 onwards were eligible. Genotyping was done using buccal swabs in a point-of-care (POC) device or by venous blood samples in the lab. The primary endpoint is maintenance therapy with P2Y12 inhibitors, with secondary endpoints being therapy changes, and time until genotype results. Therapy changes based on genotyping method were assessed using the Chi-square and Mann-Witney U test.
Results:
In total, 1,530 patients were included in the registry from June 2021 to January 2023, with 738 ticagrelor treated patients receiving a CYP2C19 genotype test. The results showed that 35% of patients carried a CYP2C19 loss-of-function allele. The median time to genotype results was 6.2 hours, with 84.6% known within 24 hours for the total population, and 91.4% for the POC analysis and 20.9% for blood analysis. Of 478 patients eligible for de-escalation, 90.4% were successfully de-escalated to clopidogrel within 24 hours in 70.9% of patients and within 48 hours in 93.1%. The time to de-escalation was significantly lower in patients analyzed using POC (25.4 hours) compared to blood analysis (58.9 hours).
Conclusion:
The implementation of routine genotyping is feasible and de-escalation rates to clopidogrel in non-carriers are acceptable. The quicker time-to-results and de-escalation highlights the potential benefits of using POC testing.
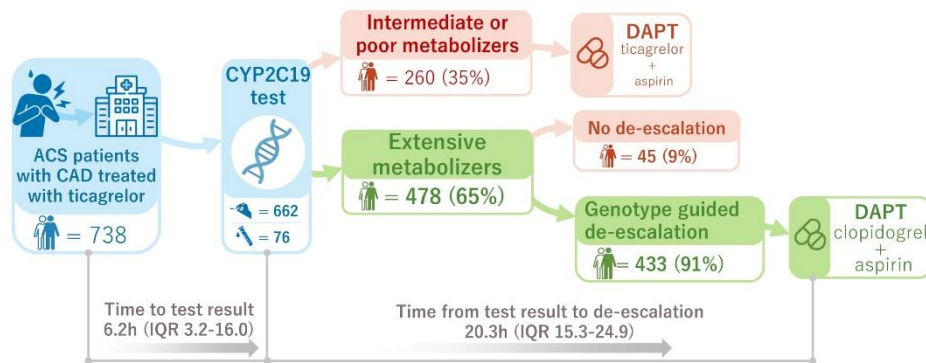
Keywords:
CYP2C19 genotyping, De-escalation strategy, Acute coronary syndrome

Figure:

Afbeelding 1. Overview of ticagrelor treated patients undergoing a genotype-guided de-escalation strategy

Impact of Recurrent Ischemic and Bleeding Events on Quality of Life in Acute Coronary Syndrome Patients: Insights from the FORCE-ACS Registry

Presenting author: N.M.R. van der Sangen
Department: Department of Cardiology

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Purpose:
Patients with acute coronary syndrome (ACS) remain at high risk for recurrent ischemic and bleeding events during follow-up. Our study aimed to quantify and compare the impact of these adverse events on quality of life (QoL).

Methods:
Data from ACS patients prospectively enrolled in the FORCE-ACS registry between January 2015 and December 2019 were used for this study. The primary ischemic and bleeding events of interest were hospital readmission for ACS and Bleeding Academic Research Consortium (BARC) type 2 or 3 bleeding during 12 months follow-up. QoL was measured using the EQ-5D visual analog scale (VAS) score and the 12-item Short Form Survey version 2 derived Physical Component Summary (PCS) and Mental Health Component Summary (MCS) scores at 12 months follow-up.

Results:
In total, 3339 patients (mean age 66.8 years, 27.9% women) were included. During follow-up, ischemic events occurred in 202 patients (6.0%) and bleeding events in 565 patients (16.9%). After adjustment for demographic and clinical characteristics, ischemic events remained independently associated with lower QoL regardless of metric used. Bleeding was also independently associated with lower EQ-5D VAS and PCS scores, but not with a lower MCS score. The QoL decrement associated with ischemic events was numerically larger than the decrement associated with bleeding.

Conclusion:
Ischemic and bleeding events remain prevalent and are independently associated with lower QoL at 12 months follow-up in patients previously admitted for ACS. The incidence and impact of these adverse events should be considered when balancing individual ischemic and bleeding risk.

Keywords:
ACS, Quality of life, Adverse events

Figure:
Negative impact of ischemic and bleeding events on QoL at 12 months in patients previously admitted for ACS. Impact is expressed as Cohen's d using the effect estimates including 95% confidence interval of ischemic and bleeding events adjusted for age, sex, initial diagnosis, revascularization during initial hospital admission and presence of at least one concomitant chronic disease. MCS denotes Mental Health Component Summary, PCS Physical Component Summary, QoL quality of life and VAS visual analog scale.
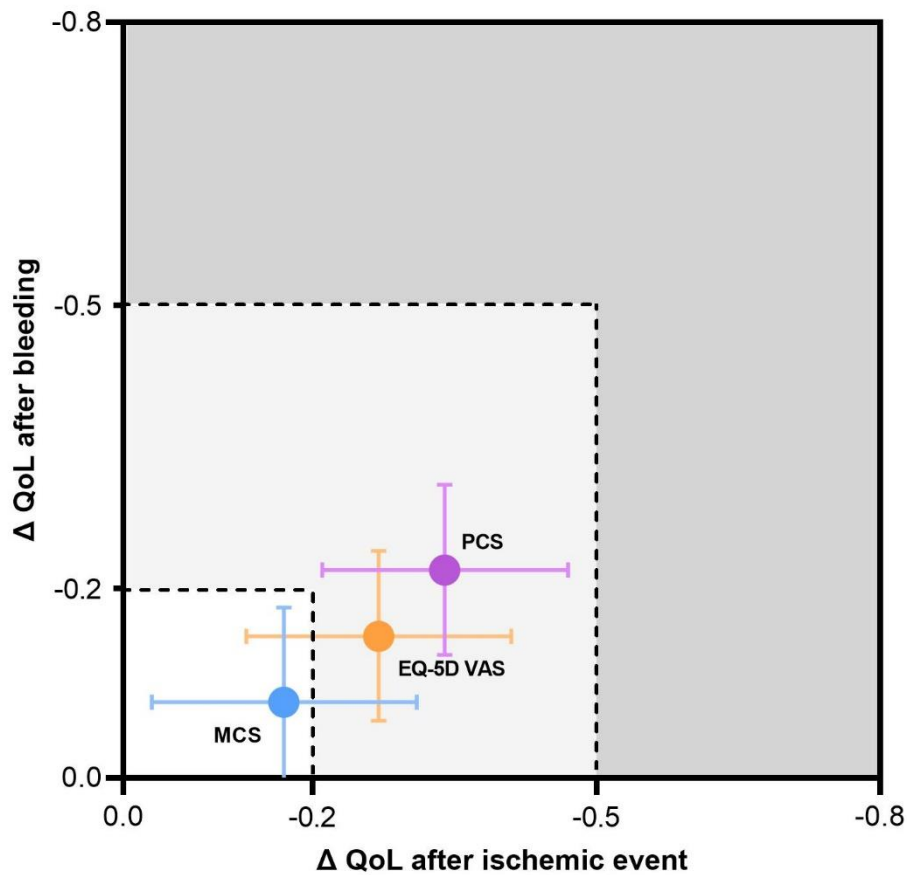
Conservative versus Invasive Management of Elderly Patients with Non-ST-elevation Myocardial Infarction

Presenting author: W.W.A. van den Broek
Department: Cardiologie

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Purpose:
Elderly patients are often underrepresented in clinical trials. The aim of this registry was to capture the medical and invasive management of elderly non-ST-elevation myocardial infarction (NSTEMI) patients and assess the impact of conservative versus invasive management on major adverse cardiovascular events (MACE).
Methods:
Patients ≥75 years of age presenting with NSTEMI were prospectively registered with a follow-up of one year. The population was stratified into invasively managed patients and conservatively managed patients, who did not undergo coronary angiography (CAG). These strata were compared using Cox proportional hazard regression in the total population and in a cohort after propensity score matching (PSM). MACE consisted of cardiovascular death, acute coronary syndrome (ACS) and stroke.
Results:
The total population consisted of 1190 patients ≥75 years with NSTEMI (median age 80 years, 43% female). Invasive management with CAG was performed in 67% (N = 798), two-thirds of whom underwent revascularization. Age, diabetes mellitus, reduced LVEF, Killip class and ST-depression at admission were independent predictors for MACE. After propensity score matching, 319 pairs of patients were successfully matched. MACE occurred more frequently in conservatively managed than in invasively managed patients, both in the total population (20% vs. 12%, adjHR 0.53, 95% CI 0.37–0.77, $p = 0.001$), and after PSM (18% vs. 12%, adjHR 0.50, 95% CI 0.31 - 0.81, $p = 0.004$).
Conclusion:
Conservatively managed patients had worse prognosis for MACE than invasively managed patients. Our real-world data argue for liberal invasive management in elderly patients presenting with NSTEMI, after careful assessment of the risk of ischemic and bleeding

complications.

Keywords:
non-ST-elevation myocardial infarction, invasive management, elderly

Figure:
Fig. Kaplan Meier Curve for major adverse cardiovascular events (MACE) for invasively and conservatively managed patients.
A. Kaplan Meier Curve for the total population before propensity score matching. B. Kaplan Meier Curve after propensity score matching.