Prehospitale triage pijn op de borst

ARTICA randomized trial

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Arts-onderzoeker Cardiologie

ARTICA RANDOMIZED TRIAL

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(Potentiële) **belangenverstrengeling**	**Geen**
Voor bijeenkomst mogelijk relevante relaties met bedrijven	•Geen
•Sponsoring of onderzoeksgeld •Honorarium of andere (financiële) vergoedingen •Aandeelhouder •Andere relatie	•Geen •Geen •Geen •Geen

Spoedafdelingen hebben duizenden ‘stops’ per jaar vanwege de dr

Spoedeisend
spoedafdeling
bedden. Dan i

nrc›

NIEUWS CENTRAAL BUREAU VOOR DE STATISTIEK

Werknemers in de zorg voelen steeds meer werkdruk

Meeste spoedritten voor hartinfarct onnodig: patiënt loopt vaak wel trauma op door rit in ambulance

dG

Stee
dicht is: 'Laatst 1,5 uur tot we iemand kwijt konden'

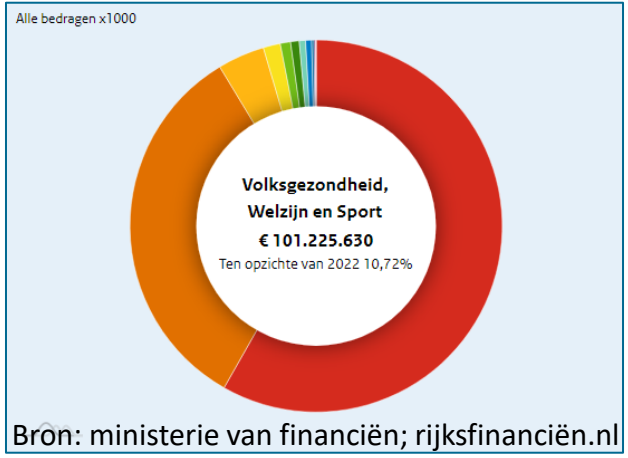
1V EenVandaag

Zorgkosten stijgen in 2022: basispakket 2,9% en langdurige zorg 4,8%

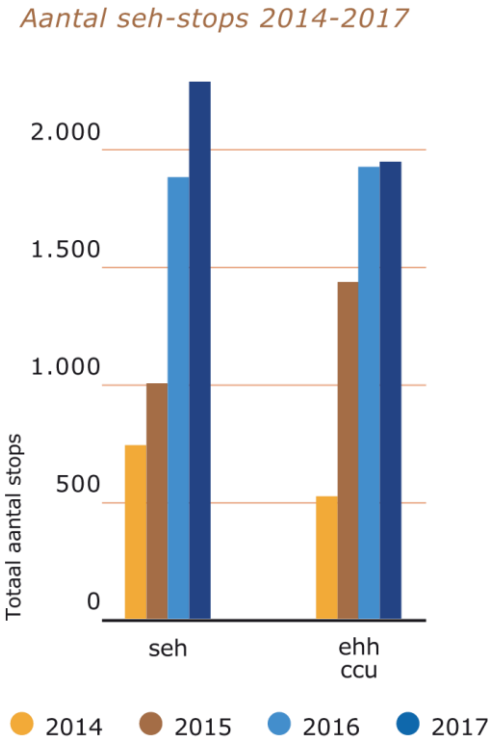
Nieuwsbericht | 28-12-2022 | 09:00

In 2022 stijgen de kosten van het basispakket van de zorgverzekering met 2,9% naar een totaal van € 51,3 miljard. De kosten van de langdurige zorg stijgen met 4,8% naar een totaal van € 29,6 miljard. Dit blijkt uit de nieuwe kwartaalcijfers van Zorginstituut Nederland.

Beeld: ©Zorginstituut Nederland



Bron: ministerie van financiën; rijksfinanciën.nl



Monitor Acute Zorg 2018, Nederlandse Zorgautoriteit

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Background

- Chest pain is accountable for 10% of all emergency department (ED) visits[1]
- In the Netherlands: over 200.000 ED visits for chest pain per year[2]
- Healthcare costs: over €246 million per year
- In Europe: over 9 million ED visits for chest pain per year
- 80-90% of chest pain patients do not have a non-ST-segment elevation acute coronary syndrome (NSTE-ACS)[3]

1. Pitts, Natl Health Stat Report 2008 2. Nederlandse Zorg autoriteit 3. Nasrallah, Eur Heart J 2011

Background

- 39.3% of chest pain patients in the ED are low-risk patient
- A point-of-care (POC) troponin measurement enables ambulance paramedics to identify low-risk patients at home[2]
- Observed major adverse cardiac events (MACE) incidence was 2.9% in pre-hospital low-risk patients (0.0% death or STEMI)[3]
- No randomized controlled trials investigating pre-hospital rule-out of NSTE-ACS with POC troponin

1 Laureano-Philips, Ann Emerg Med 2019 2 Tolsma, Eur Heart J Acute Cardiovasc Care 2022 3 Dongen van, Eur Heart J Acute Cardiovasc Care 2018

Objective

- To assess costs from a healthcare perspective at 30 days of pre-hospital rule-out of NSTE ACS, as compared to standard transfer to the ED

Primary outcome

- Healthcare costs at 30 days

Secondary outcome

- 30 days MACE prevalence
- 30 days MACE occurrence after rule-out of ACS (pre-hospital rule-out with a low POC troponin concentration or rule-out at the ED)
- 12 months MACE prevalence and cost effectiveness (follow-up ongoing, expected May 2023)

MACE = ACS, unplanned revascularization or death

Sampe size

- Estimated mean costs were €1259 with a mean difference of €507: a total of 784 patients would achieve 80% power with an alpha of 0.05
- Sample size was enlarged by 10% to compensate for potential loss to follow-up to a total of 866 patients

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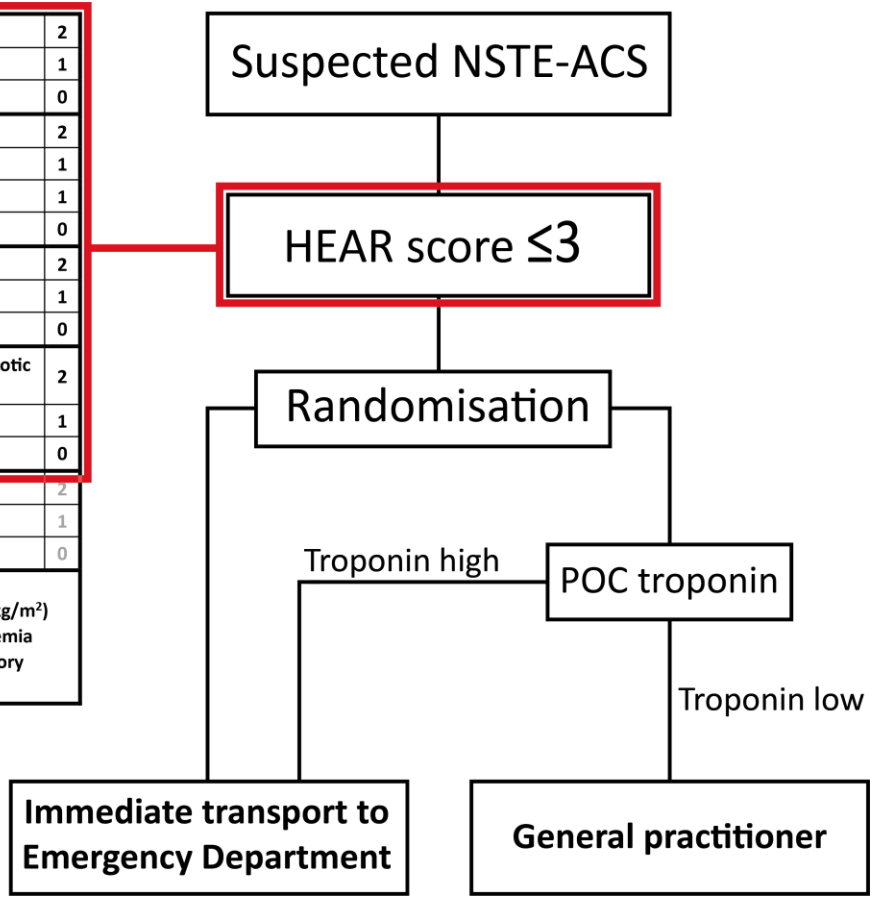
Trial design

History	Highly suspicious	2
	Moderately suspicious	1
	Slightly suspicious	0
ECG	Significant ST-segment depression	2
	Non-specific repolarisation disturbance	1
	LBBB or PM	1
	Normal	0
Age	≥65 years	2
	45-65 years	1
	<45 years	0
Risk factors	≥3 risk factors *OR* history of atherosclerotic disease	2
	1 or 2 risk factors	1
	No risk factors	0
Troponin T point of care	>60 ng/l	2
	40-60 ng/l	1
	<40 ng/l	0

Risk factors:

- Smoking
- Hypertension
- Diabetes mellitus
- Obesity (BMI > 30 kg/m²)
- Hypercholesterolaemia
- Positive family history



Organization

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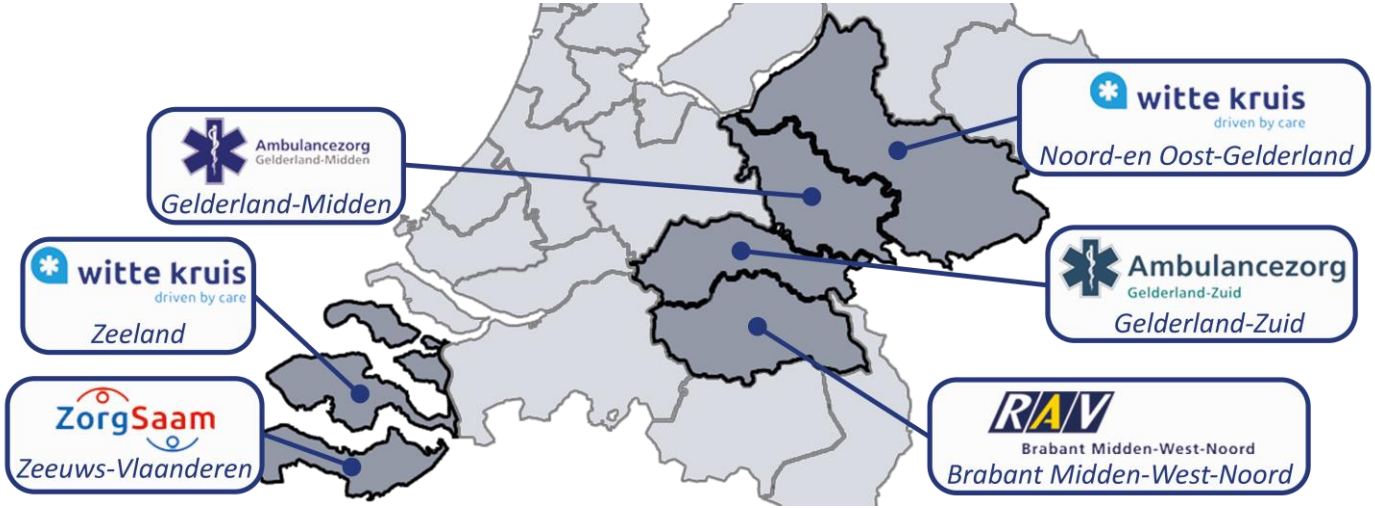
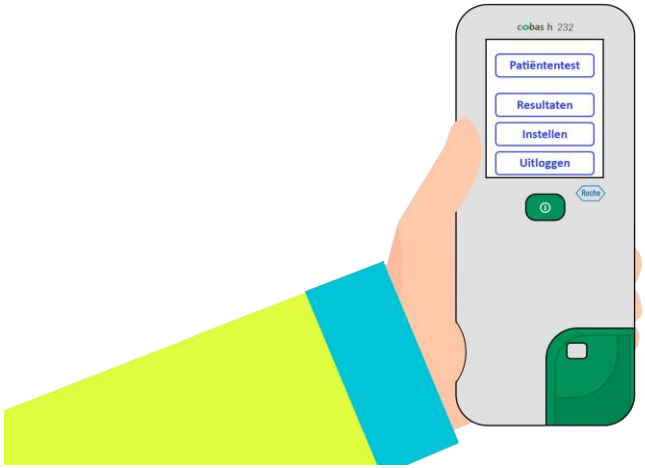
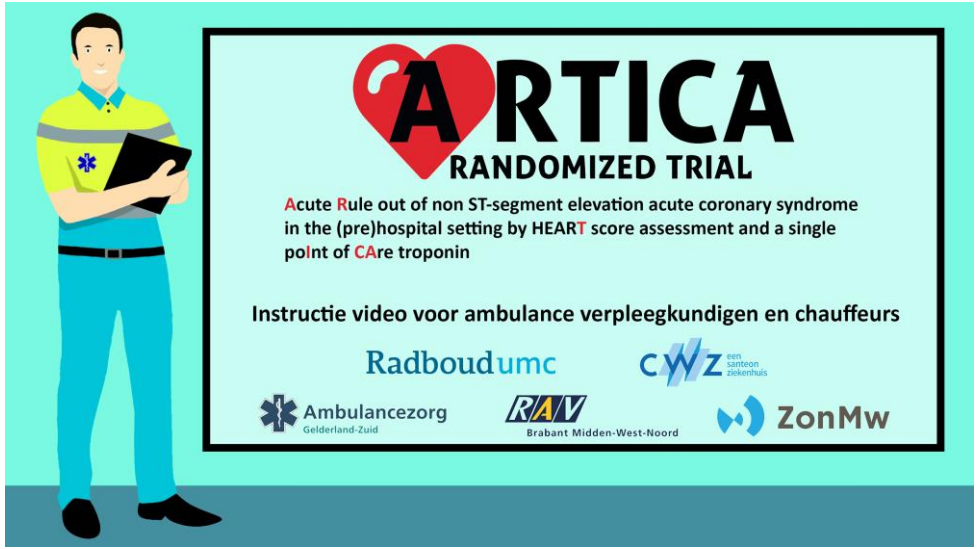


- 112 ambulances
- 2.5 million inhabitants

Training

A total of 550 ambulance paramedics were trained to perform screening, randomization and the POC troponin measurement





Patients

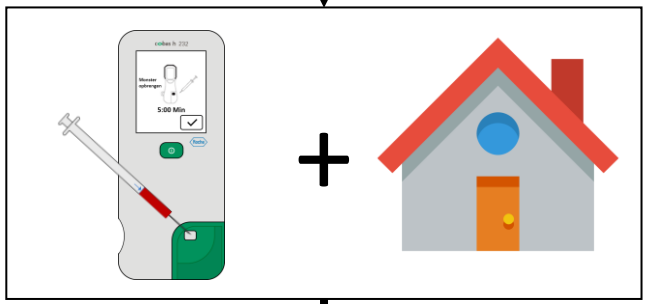
- Inclusion
  - Age ≥18 years
  - Suspected NSTE-ACS
  - Symptom onset >2 hours
  - HEAR score ≤3
  - Provided written informed consent
- Exclusion
  - ST-segment elevation
  - Suspected non-cardiac cause of symptoms requiring ED visit (e.g. aortic dissection or pulmonary embolism)
  - Cardiogenic shock
  - Syncope
  - Acute heart failure
  - Acute heart rhythm- or conduction- disorders
  - Known end-stage renal failure

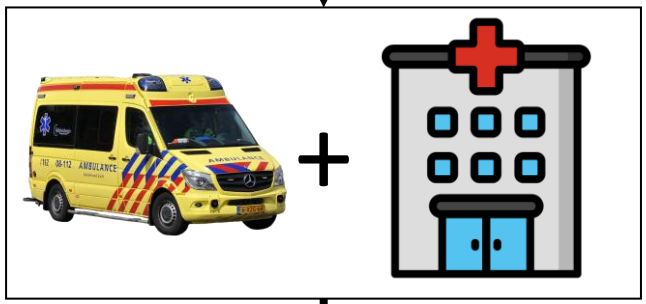
Flow diagram

1138 screened

272 ineligible

866 randomized





1 IC withdrawn

2 IC withdrawn

434
Pre-hospital rule-out strategy

429
ED rule-out strategy

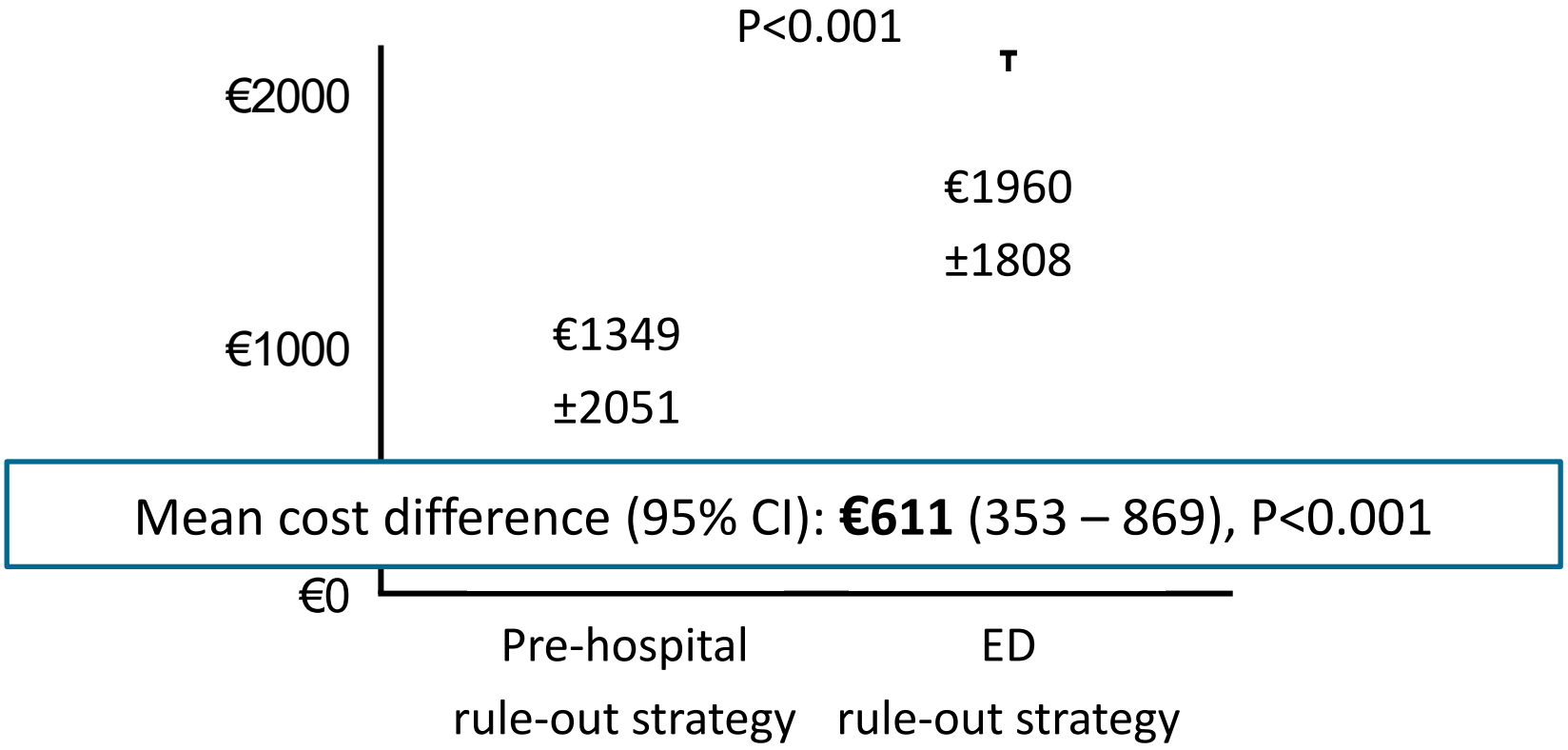
→ No patients lost to follow-up ←

Baseline

	Pre-hospital rule-out strategy (n=434)	ED rule-out strategy (n=429)
Age, years (SD)	53.7 (13.1)	53.2 (12.5)
Female sex	247 (56.9%)	248 (57.8%)
HEAR score (SD)	2.4 (0.7)	2.4 (0.8)
History of atherosclerotic disease	34 (7.8%)	23 (5.4%)
Hypertension	85 (19.6%)	71 (16.6%)
Diabetes mellitus	22 (5.1%)	14 (3.3%)
Current smoking	112 (25.8%)	110 (25.6%)
Hypercholesterolemia	37 (8.5%)	35 (8.2%)
Family history positive	155 (35.7%)	152 (35.4%)
BMI ≥30 kg/m2	86 (19.8%)	80 (18.6%)

Primary outcome

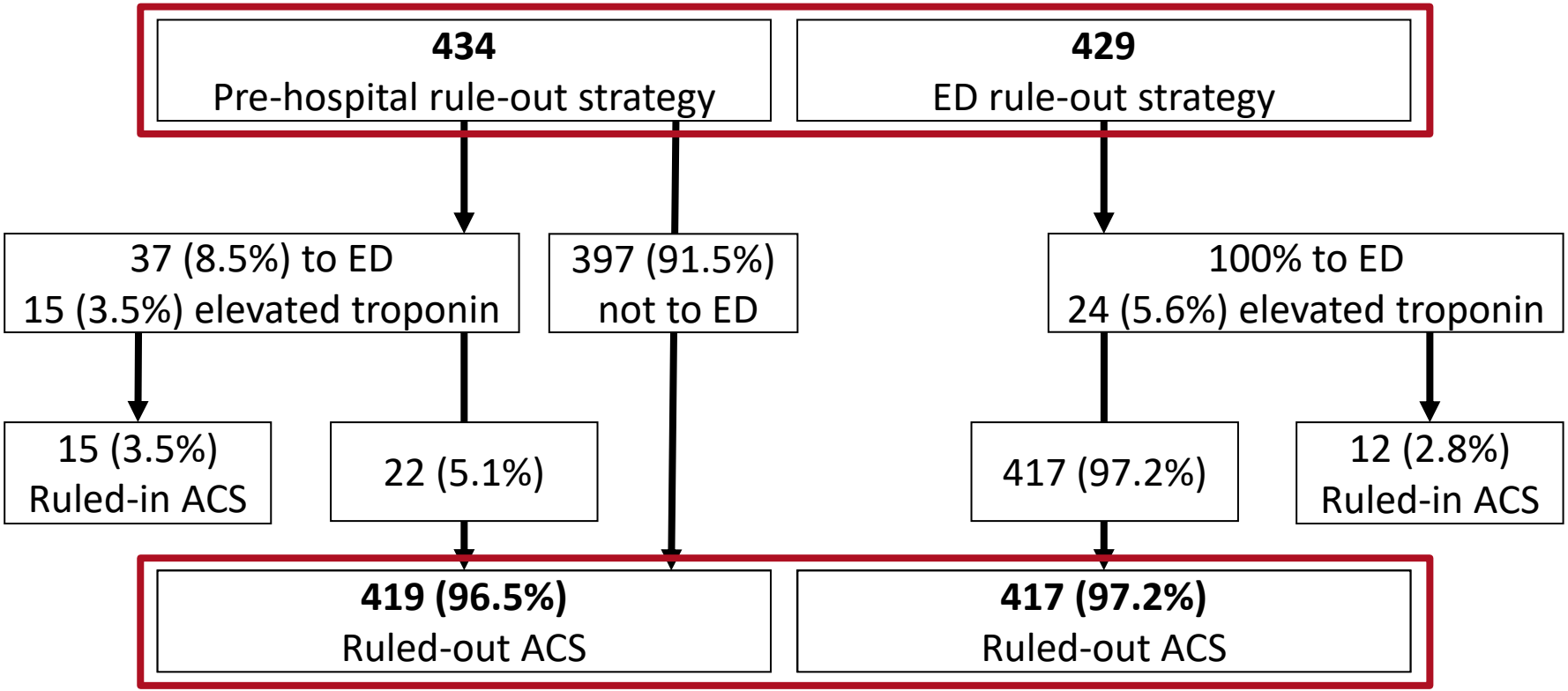
Mean healthcare costs at 30 days



Healthcare resource use

	Pre-hospital rule-out strategy (n=434)	ED rule-out strategy (n=429)	P-value
1 additional ambulance transport	24 (5.5%)	10 (2.3%)	0.02
≥2 additional ambulance transports	2 (0.5%)	0 (0.0%)	0.16
1 ED visit	59 (13.6%)	411 (95.8%)	<0.001
≥2 ED visits	5 (1.2%)	18 (4.2%)	0.006
1 GP consultation	338 (77.9%)	132 (30.8%)	<0.001
≥2 GP consultations	96 (22.1%)	31 (7.2%)	<0.001
Outpatient clinic visit	54 (12.4%)	46 (10.7%)	0.43
CT	12 (2.8%)	17 (4.0%)	0.33
Echocardiography	54 (12.4%)	44 (10.3%)	0.31
Treadmill	41 (9.4%)	52 (12.1%)	0.21
CAG	20 (4.6%)	20 (4.7%)	0.97
PCI	13 (3.0%)	12 (2.8%)	0.86
CABG	1 (0.2%)	1 (0.2%)	0.99
Hospitalization	32 (7.4%)	42 (9.8%)	0.21

Ruled out ACS



Safety: Intention to treat

	Pre-hospital rule-out n=434	ED rule-out n=429	P-value
MACE	17 (3.9%)	16 (3.7%)	0.89
ACS	17 (3.9%)	15 (3.5%)	0.74
Unplanned revascularisation	12 (2.8%)	13 (3.0%)	0.82
Death (all cause)	0 (0.0%)	1 (0.2%)	0.31

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Safety: Ruled-out ACS

	Pre-hospital rule-out n=419 (97%)	ED rule-out n=417 (97%)	P-value
MACE	2 (0.5%)	4 (1.0%)	0.41
ACS	2 (0.5%)	3 (0.7%)	0.65
Unplanned revascularisation	2 (0.5%)	3 (0.7%)	0.65
Death (all cause)	0 (0.0%)	1 (0.2%)	0.32

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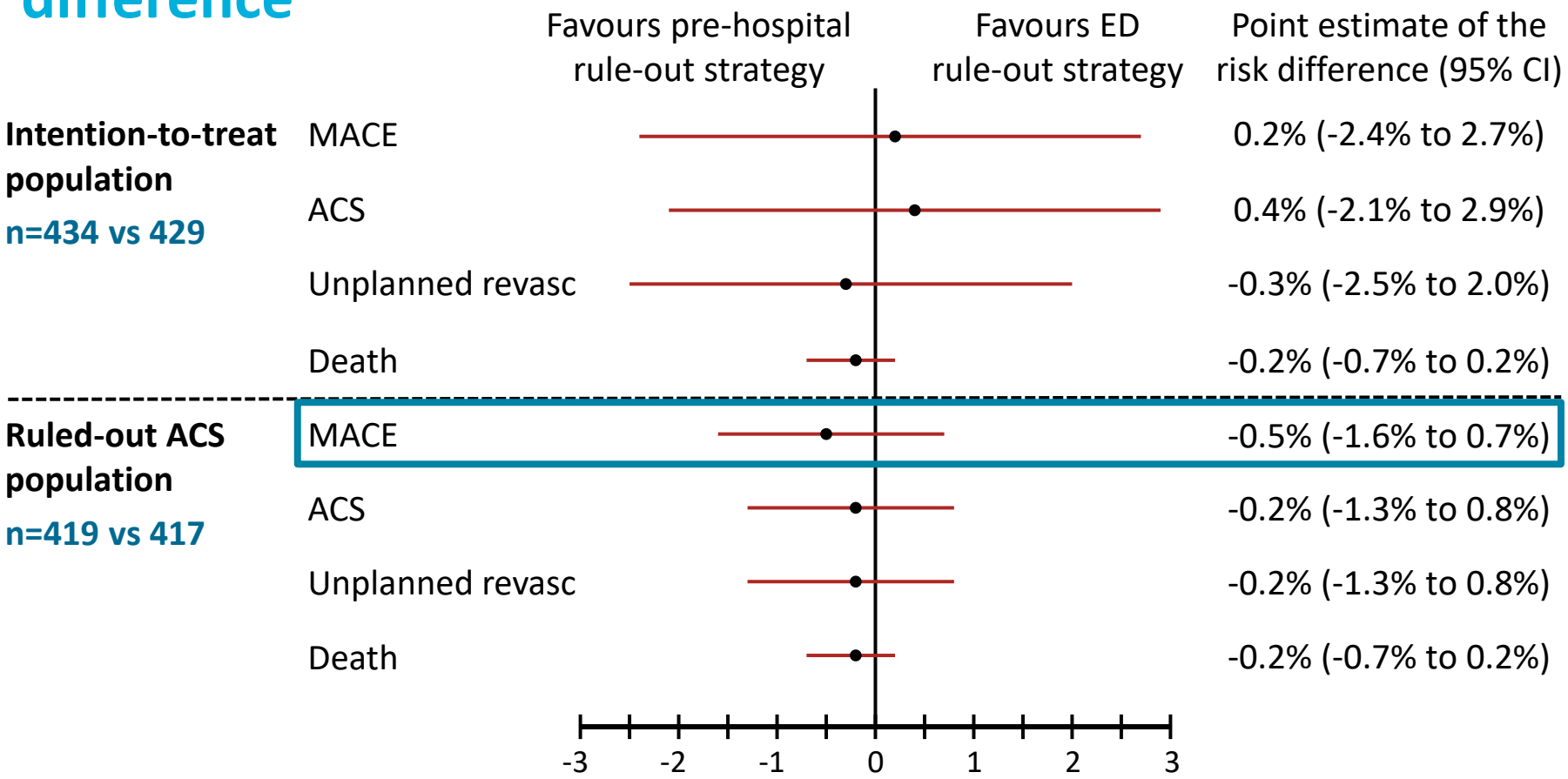
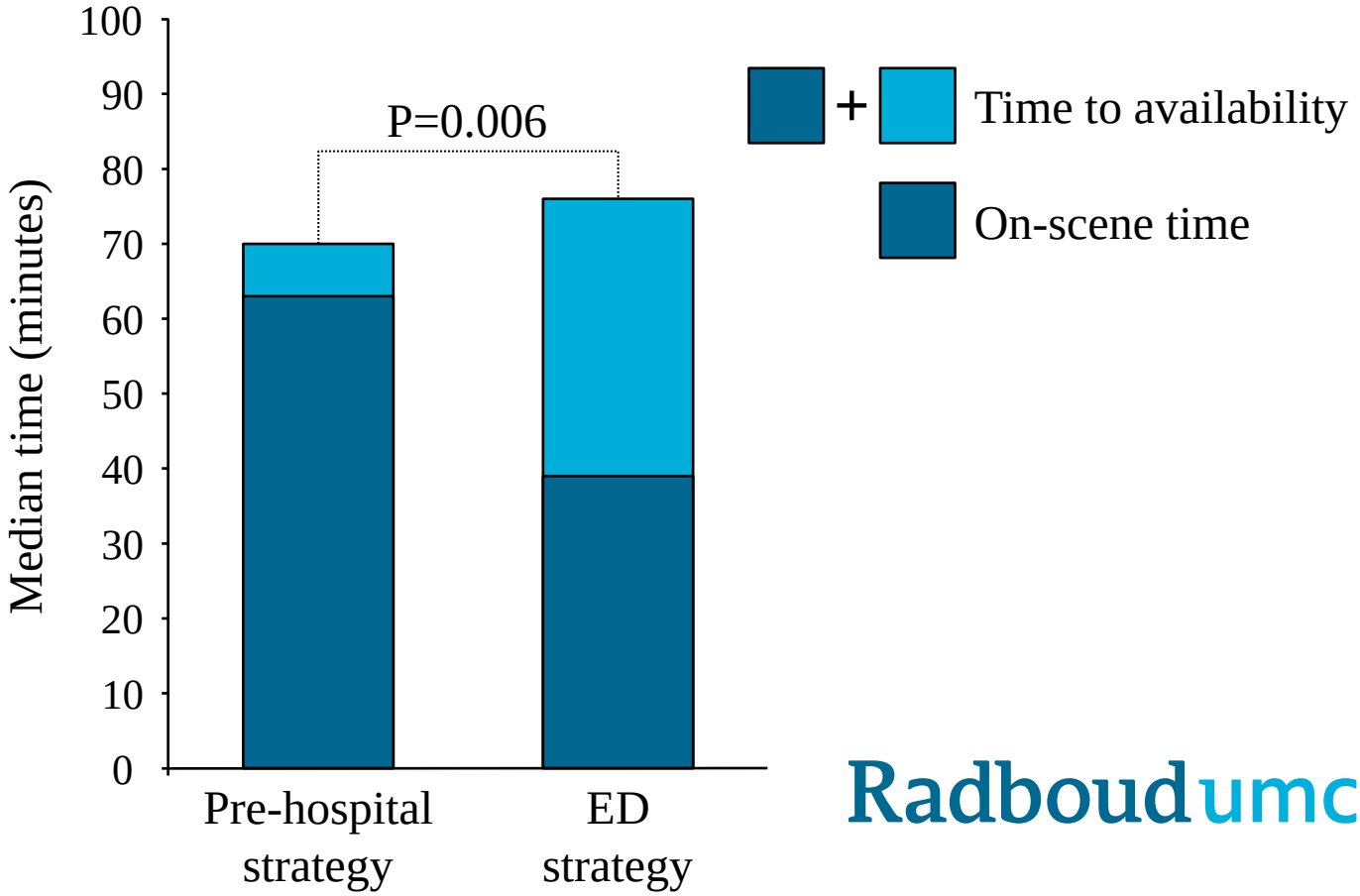
30-day safety: risk difference



Time to availability



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Conclusions

- Pre-hospital rule-out of NSTE-ACS resulted in a significant reduction of healthcare costs in the first 30 days (- € 611)
- MACE at 30 days was low in both groups (3.9% vs 3.7%, P=0.89)
- MACE at 30 days in patients with pre-hospital ruled-out ACS was very low and similar to that in the patients with ruled-out ACS at the ED (<1.0%)
- Ambulances in the pre-hospital rule-out group are quickly available for new emergency calls

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Implications

- Implementation in current practice
  - Very low risk of MACE (0.5%) and no mortality observed in the pre-hospital ruled-out ACS population
  - Immediate reduction in healthcare costs and ED overcrowding
  - Close monitoring in a registry and systematic training of ambulance paramedics

- New multicenter randomized non-inferiority trial

Thank you for your attention

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