UNIVERSITY OF GOTHENBURG

Heparin versus bivalirudin in patients with non ST-elevation acute coronary syndrome undergoing percutaneous coronary intervention

- a report from the Swedish Coronary Angiography and Angioplasty Registry (SCAAR)

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Potential conflicts of interests

- Advisory board: AstraZeneca, Bayer
- Institutional research grant: AstraZeneca, Medtronic, Abbott, Merit Medical

Bivalirudin treatment of choice in NSTE-ACS

– ESC NSTE-ACS guidelines 2011

Bivalirudin plus provisional GP IIb/IIIa receptor inhibitors are recommended as an alternative to UFH plus GP IIb/IIIa receptor inhibitors in patients with an intended urgent or early invasive strategy, particularly in patients with a high risk of bleeding.	I	B

– ACC/AHA NSTE-ACS guidelines

Class IIa

2. For UA/NSTEMI patients in whom an initial invasive strategy is selected, it is reasonable to omit administration of an IV GP IIb/IIIa inhibitor if bivalirudin is selected as the anticoagulant and at least 300 mg of clopidogrel was administered at least 6 hours earlier than planned catheterization or PCI (57,76,77). *(Level of Evidence: B)*

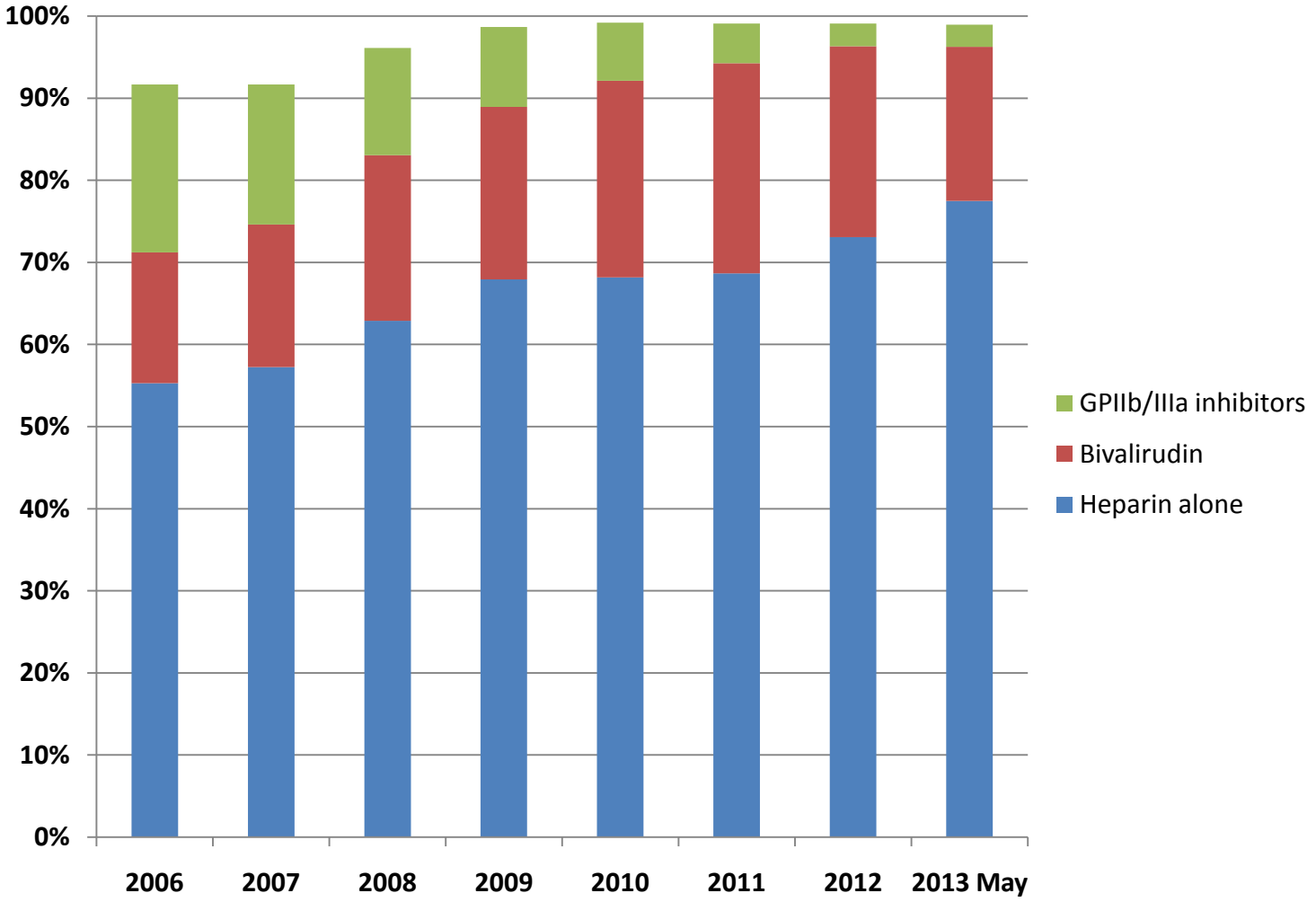
Bivalirudin treatment of choice in NSTE-ACS?

The NEW ENGLAND JOURNAL of MEDICINE 2006

- Bivalirudin vs GPIIb/IIIa inhibitors
- < 60% biomarker positive
- < 60% PCI
- 60% pretreated with clopidogrel
- 6.2% radial access

Ramin Ebrahimi, M.D., Martial Hamon, M.D., Lars H. Rasmussen, M.D., Hans-Jürgen Rupprecht, M.D., James Hoekstra, M.D., Roxana Mehran, M.D., and E. Magnus Ohman, M.D., for the ACUITY Investigators*

Anti-thrombotic treatment in NSTE-ACS PCI in Sweden 2006-2013



Bivalirudin vs Heparin in NSTE-ACS

randomised trials

- **BAT trial** (Bittl et al NEJM 1995;333:764-9)
  - 4098 patients randomised 1993-1994
  - Composite endpoint NS
  - Bivalirudin reduced major bleeding
  - Trend for higer mortality in the bivalirudin group (p=0.08)!
- **ISAR-REACT 3** (Kastrati et al NEJM 2008;359:688-96.)
  - 4570 biomarker negative patients randomised 2005-2008
  - Composite endpoint NS including major bleeding
  - Bivalirudin reduced major bleeding

- All randomised patients had femoral access
- Majority of randomized patients were biomarker negative

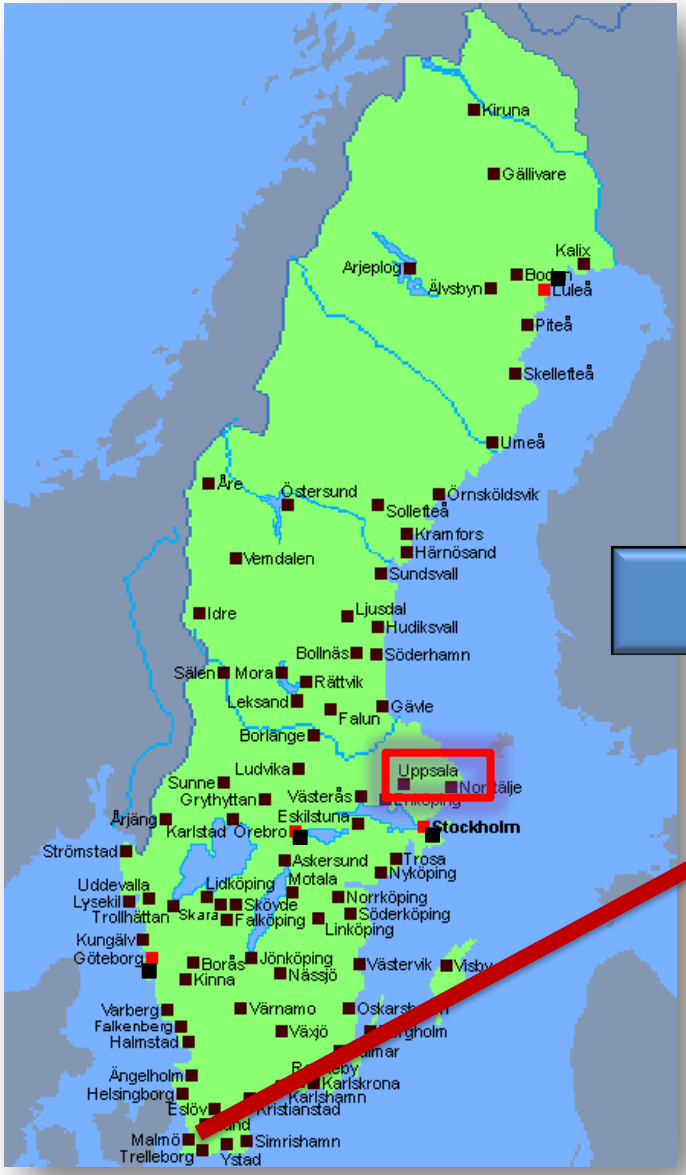
Purpose

- **Purpose: To compare the outcome of heparin alone versus bivalirudin in patients with NSTE-ACS undergoing PCI between 2005-2013 and registered in SCAAR**

- **Endpoint: 30-day mortality**

SCAAR

Swedish Coronary Angiography and Angioplasty Registry



30 hospitals performing PCI and angiography.
Financed by Swedish government.
No support from the industry.

SWEDEHEART

RIKS-HIA, SCAAR, SEPHIA och Svenska Hjärtkirurgiregistret som ett register

TILL REGISTRET | KORTINLOGGNING | RIKS-HIA | SCAAR | SEPHIA | HJÄRTKIRURGI | Sök...

- > Förstasidan
- Nyheter
- Dokument
- Årsrapporter
- Kontakter
- Synpunkter på registret
- Bilder årsmöten
- Om webbplatsen
- Webmaster

PATIENTER / ALLMÄNHET

Information

ENGLISH

Annual report

MONITORER

Undvik att skapa Vårdkedja där det inte ska skapas en RIKS-HIA del

Fr o m mitten av april har en ökad mängd Startsidor fått en ägare (dvs en specifik sjukhusenhet har fått ansvaret att registrera denna sida).

Läs mer...

DETO2X

Syrgas eller inte vid hjärtinfarkt?

Anmäl ert sjukhus nu!

Läs mer

SENASTE NYTT

- Ny release 2013-06-10
- Undvik att skapa Vårdkedja där det inte ska skapas en RIKS-HIA del
- SWEDEHEART uppdatering 2013-04-10
- Ny randomiserad studie i SWEDEHEART
- Uppdaterad RIKS-HIA manual!

MÖTEN OCH KONGRESSER

MED STÖD AV

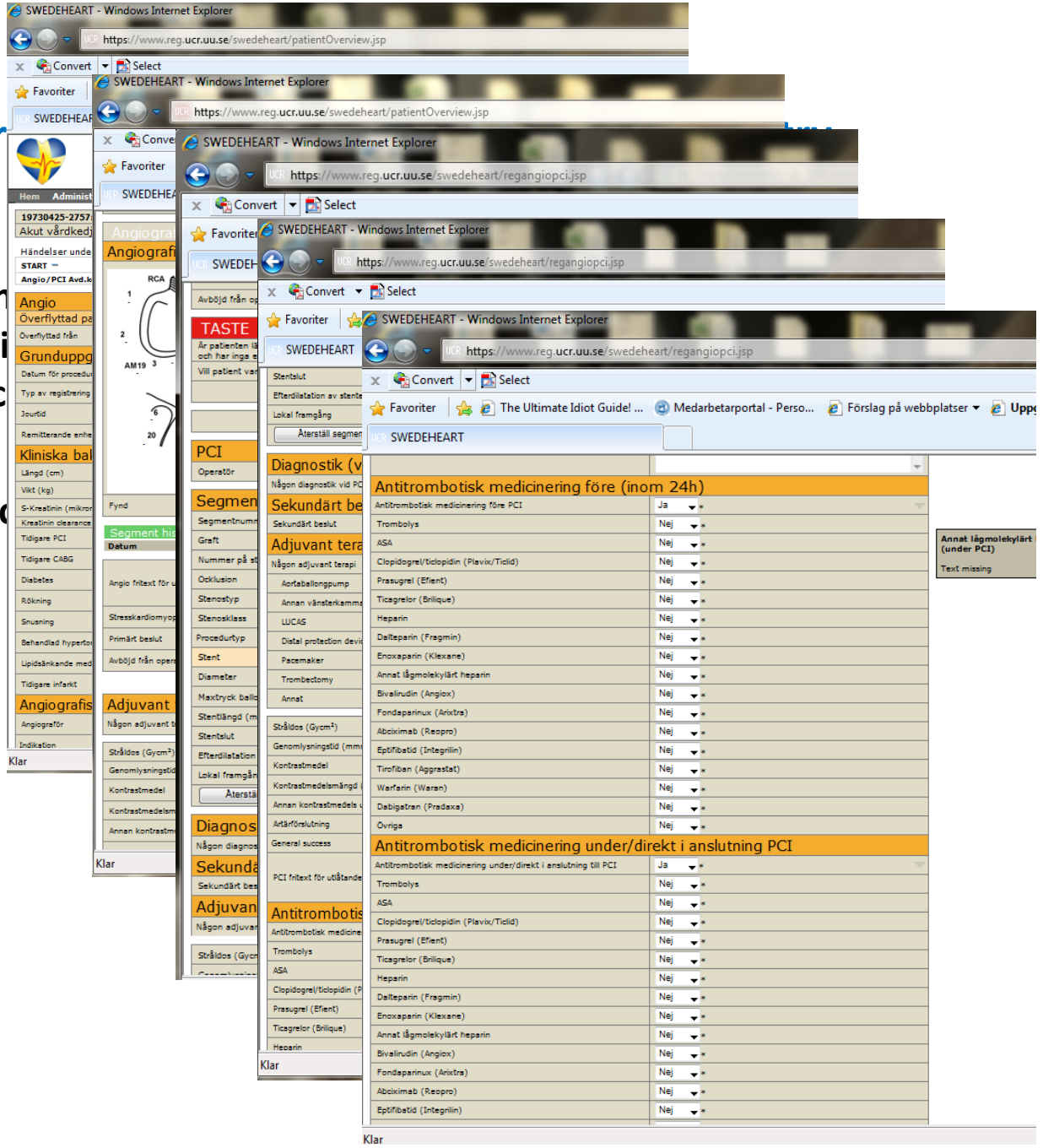
Socialstyrelsen

Sveriges Kommuner och Landsting

http://www.ucr.uu.se/swedeheart/

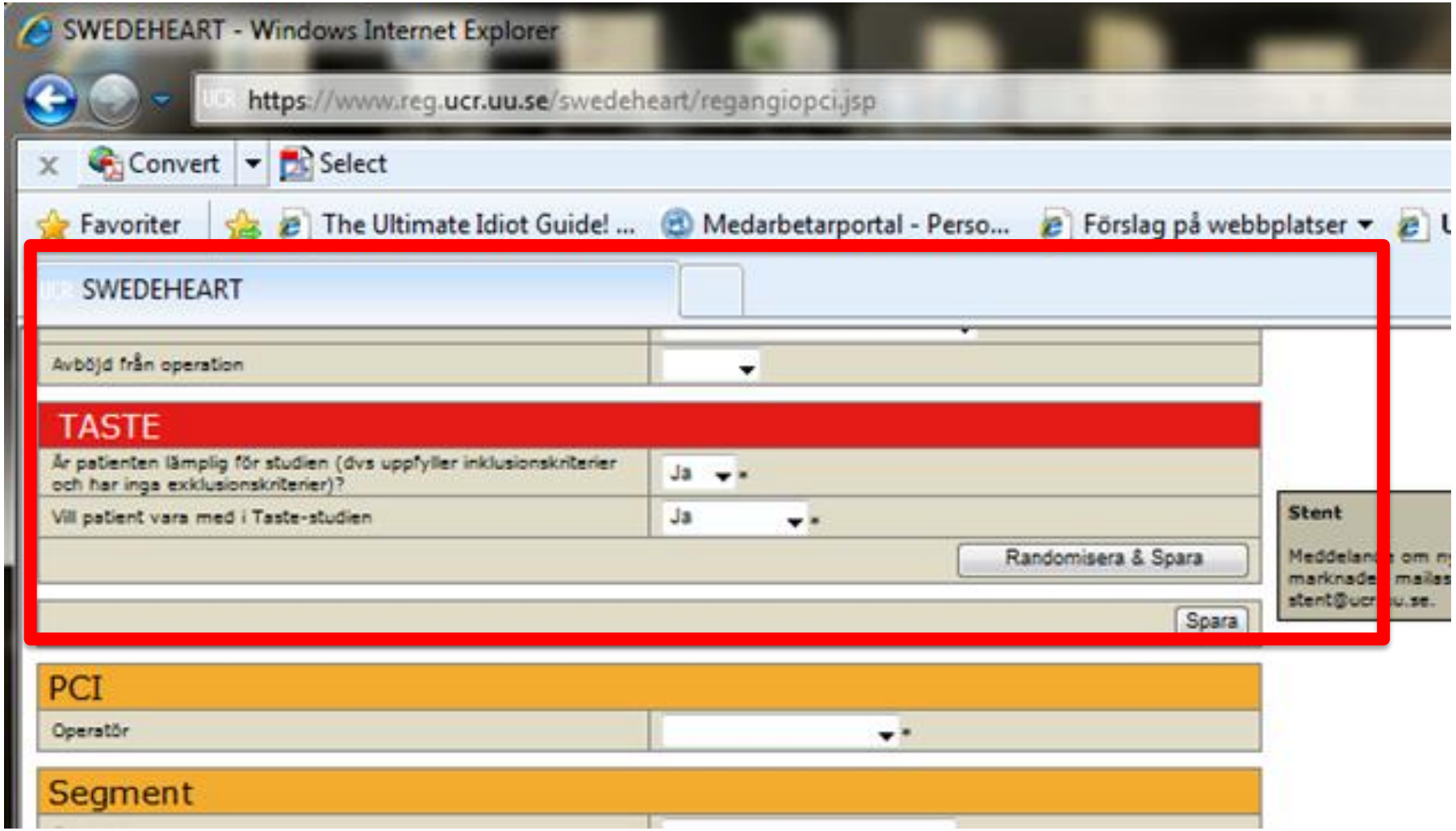
Swedish Cor

- 100% coverage
- All coronary angiogram
  PCI procedures are regi
  immediately after proc
- 200 variables
- Linked to the national
  specific death registry



RANDOMISED REGISTRY CLINICAL TRIAL

RRCT



UCR

Uppsala Clinical
Research Center

SWEDE HEART

Thrombus Aspiration in ST-Elevation myocardial infarction in Scandinavia (TASTE trial)

Main results at 30 days

Ole Fröbert, MD, PhD - on behalf of the TASTE investigators

Departement of Cardiology
Örebro University Hospital
Sweden

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

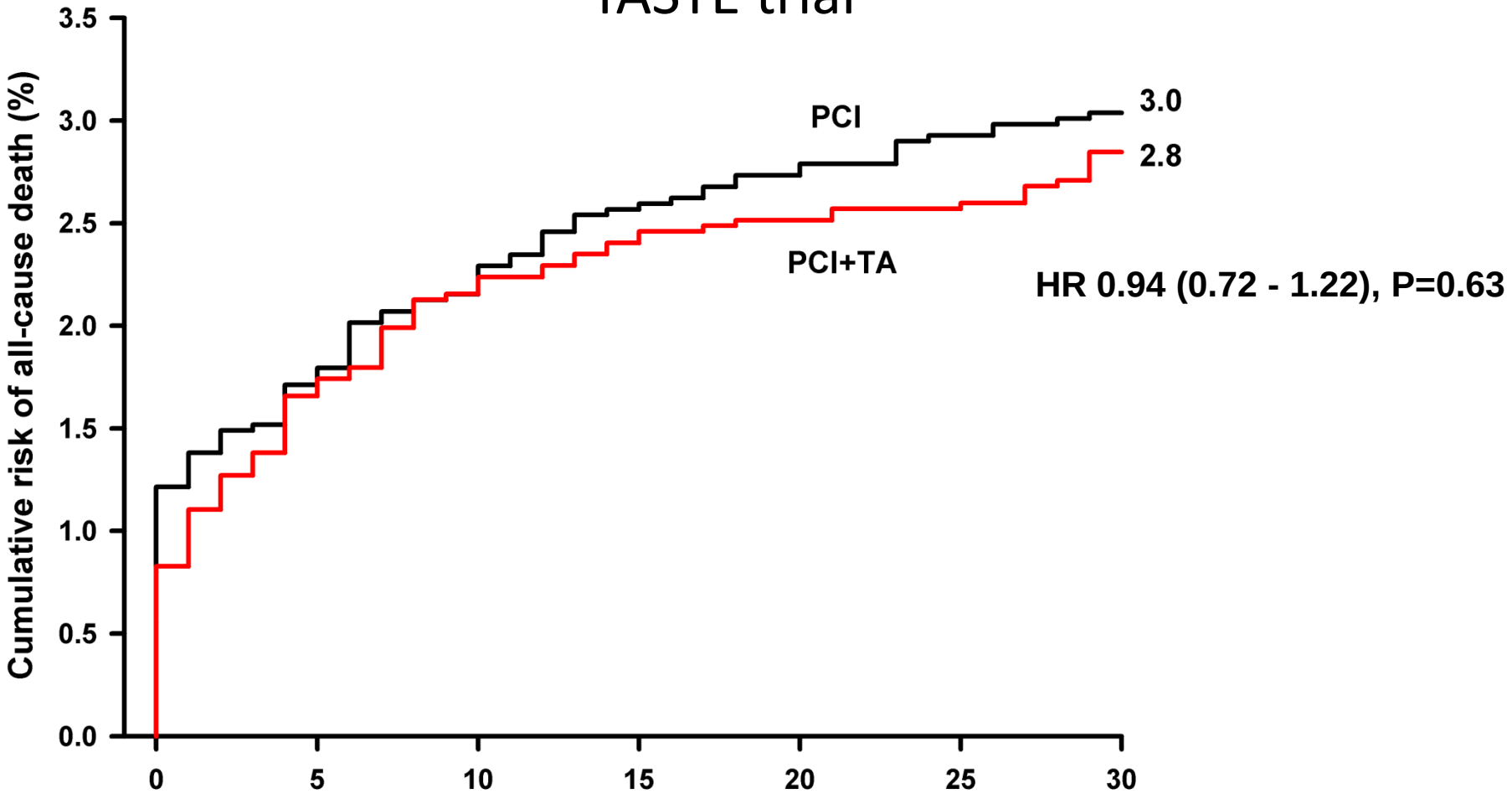
Thrombus Aspiration during ST-Segment Elevation Myocardial Infarction

Ole Fröbert, M.D., Ph.D., Bo Lagerqvist, M.D., Ph.D., Göran K. Olivecrona, M.D., Ph.D., Elmir Omerovic, M.D., Ph.D., Thorarinn Gudnason, M.D., Ph.D., Michael Maeng, M.D., Ph.D., Mikael Aasa, M.D., Ph.D., Oskar Angerås, M.D., Fredrik Calais, M.D., Mikael Danielewicz, M.D., David Erlinge, M.D., Ph.D., Lars Hellsten, M.D., Ulf Jensen, M.D., Ph.D., Agneta C. Johansson, M.D., Amra Kåregren, M.D., Johan Nilsson, M.D., Ph.D., Lotta Robertson, M.D., Lennart Sandhall, M.D., Iwar Sjögren, M.D., Ollie Östlund, Ph.D., Jan Harnek, M.D., Ph.D., and Stefan K. James, M.D., Ph.D.

This article was published on September 1, 2013, at NEJM.org.

All-cause mortality at 30 days

TASTE trial



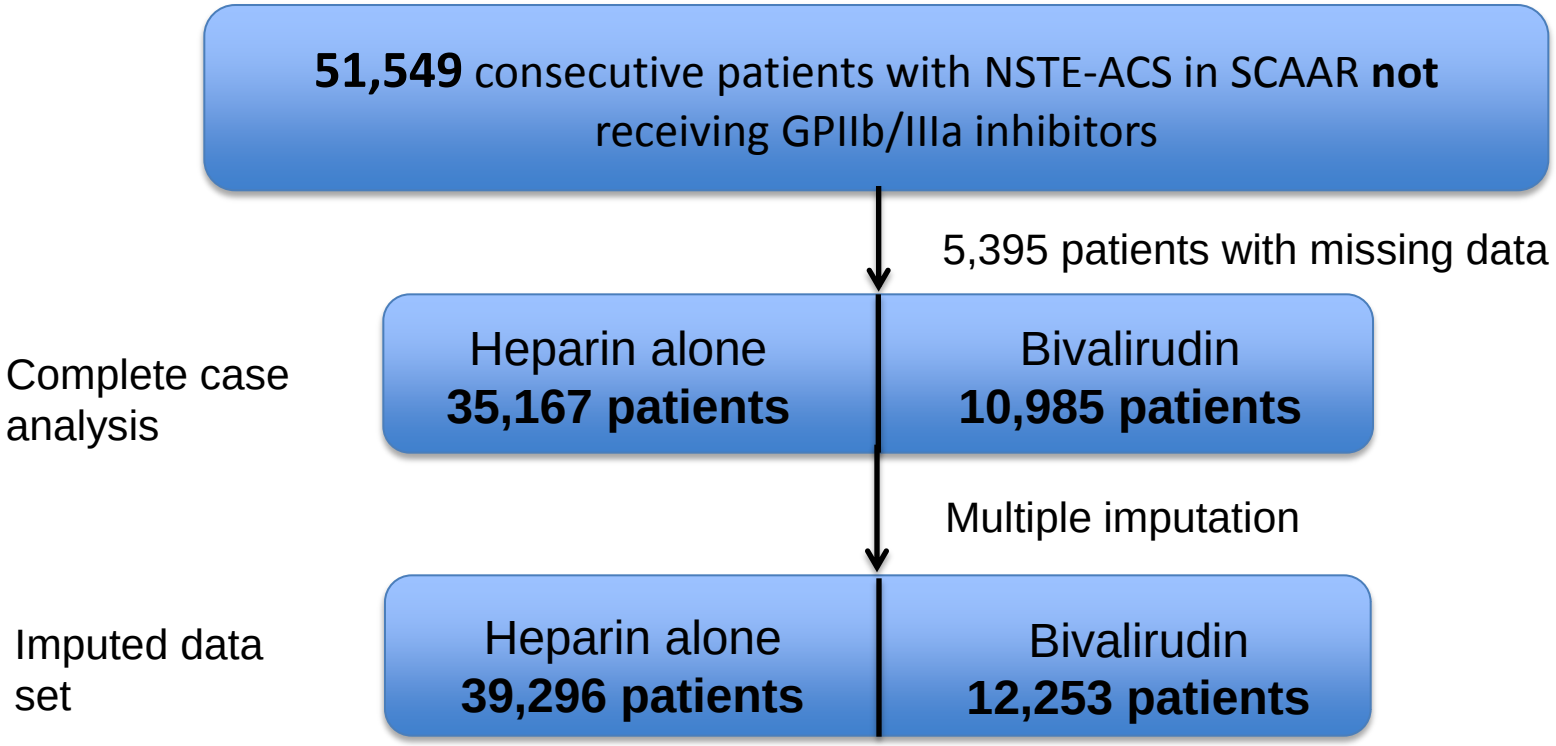
No. at Risk

PCI+TA	3621	3568	3540	3532	3526	3524	3519
PCI	3623	3567	3545	3530	3523	3517	3513

TASTE

Study design

heparin vs. bivalirudin



Baseline characteristics

	UH/LMWH (n=39,298)	Bivalirudin (n=12,252)	p-value	p-value after ps-score adjustment	Missing (n)
Age (mean±SD)	67.6 ± 11	68.3 ± 11	<0.001	0.56	185
Female (%)	28	30	0.004	0.90	0
Treated hypertension (%)	59	56	<0.001	0.79	546
Treated hyperlipidemia (%)	56	54	0.02	0.85	629
Prior MI (%)	28	26	<0.001	0.70	908
Prior PCI (%)	19	16	<0.001	0.51	21
Ex-smokers (%)	40	37	<0.001	0.70	1,929
Active smokers (%)	20	20	0.53	0.90	1,929
Prior CABG (%)	11	11	0.05	0.87	10
Diabetes (%)	21	20	0.02	0.94	150
ASA (%)	97	97	0.008	0.74	15
Clopidogrel/Ticagrelor/ Prasugrel (%)	94	92	<0.001	0.29	35
Pretreated with UH/LMWH/Fondaparinux (%)	54	55	0.08	0.91	28
Warfarin (%)	2.2	1.6	<0.001	0.48	5
Positive biomarkers (%)	74	80	<0.001	0.29	1,515

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Procedural characteristics

	UH/LMWH (n=39,298)	Bivalirudin (n=12,252)	P-value	p-value after ps-score adjustment	Missing (n)
UH/LMWH/Fondaparinux during the procedure (%)	100	28	n/a	n/a	0
Access site					
Femoral (%)	47	47	0.45	0.80	0
Radial (%)	53	53	0.45	0.80	0
Angiographical findings					
One vessel disease (%)	47	43	<0.001	0.50	249
Two vessel disease (%)	30	31	0.12	0.89	249
Three vessel disease (%)	18	20	<0.001	0.75	249
Left main stem disease (%)	4.8	6.1	<0.001	0.50	249
Complete revascularization (%)	66	60	<0.001	0.30	430
Use of stent (%)	92	94	<0.001	0.59	0
Use of DES (%)	48	41	<0.001	0.43	0

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Statistical models

(adjustement for confounders)

1. **Complete case analysis** adjusted for propensity score

   Multilevel logistic regression

2. **Imputed data** set adjusted for propensity score

   Missing data imputed by multiple imputation model

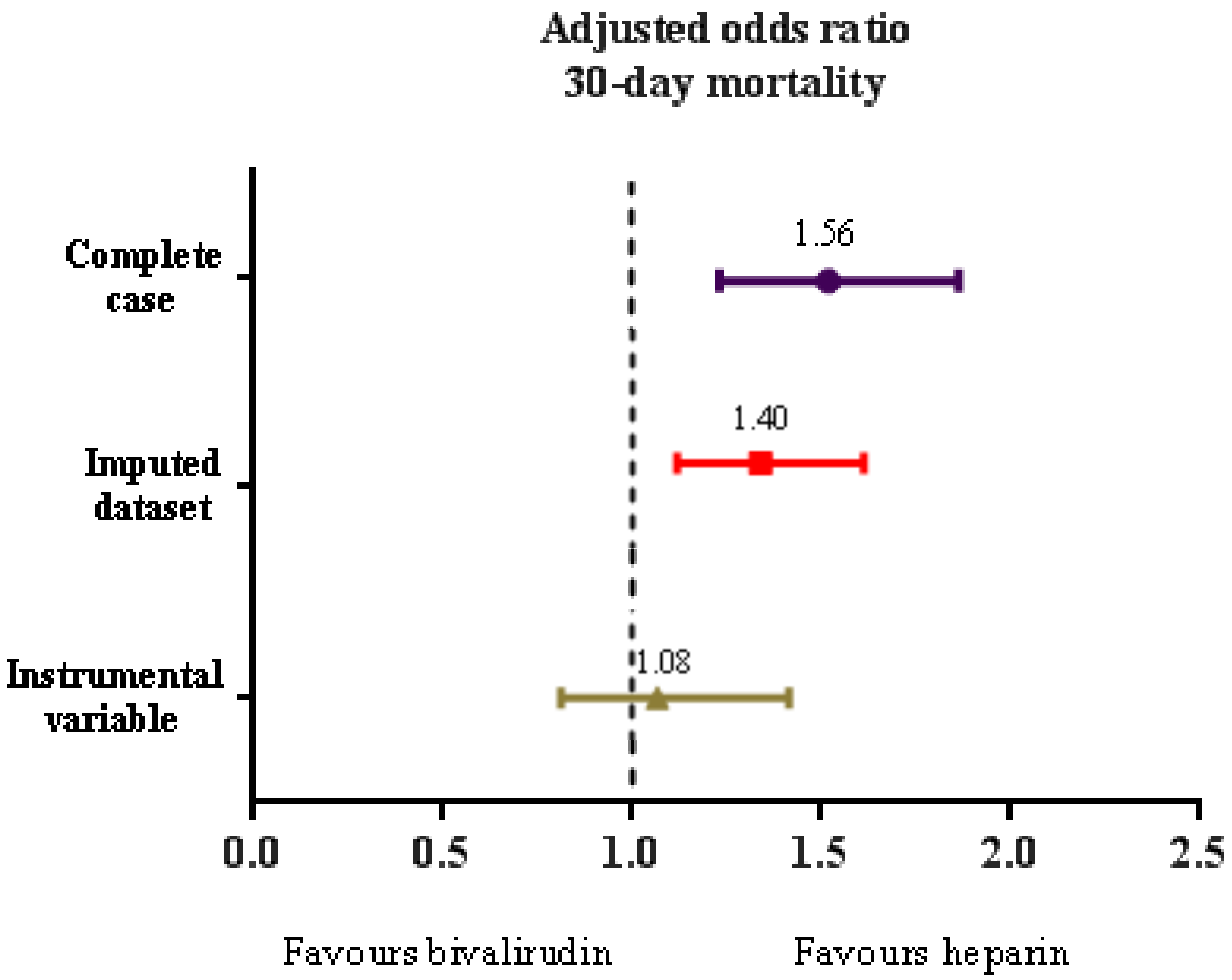
   Multilevel logistic regression

3. **Instrumental variable analysis**

   To adjust for unknown/unmeasured confounders!

Adjusted for: age, biomarkers, procedural success, hypertension, hyperlipidemia, gender, antiplatelet therapy, warfarin therapy, UFH/LMWH treatment, prior CABG, prior MI, prior PCI, diabetes, smoking, year, angiographic findings, access site, usage of DES, CTO procedure, completeness of revascularization)

Results


Adjusted odds ratio
30-day mortality
Complete case
Imputed dataset
Instrumental variable
1.56
1.40
1.08
0.0
0.5
1.0
1.5
2.0
2.5
Favours bivalirudin
Favours heparin

Conclusion

- **Our large observational study questions the superiority of bivalirudin over heparin in the absence of GP IIb/IIIa blockade in patients with NSTE-ACS undergoing PCI.**

- **A prospective randomized trial evaluating bivalirudin vs heparin is highly warranted.**

- **The register-based randomized clinical trial VALIDATE-SWEDEHEART comparing bivalirudin to heparin in patients pretreated with novel ADP-receptor blockers (n=6000) is under way.**

Planned RRCTs in SCAAR