

CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE  
CONTROVERSIES & UPDATES IN VASCULAR SURGERY

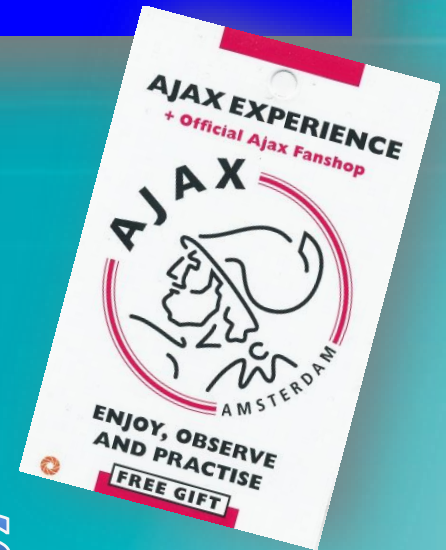
JANUARY 19-21 2017

MARRIOTT RIVE GAUCHE & CONFERENCE CENTER  
PARIS, FRANCE



# When should rupture be denied intervention

AJAX TRIAL  
COLLABORATORS





## Disclosure

Speaker name:

WillemWisselink.....

I have the following potential conflicts of interest to report:

Consulting

Employment in industry

Shareholder in a healthcare company

Owner of a healthcare company

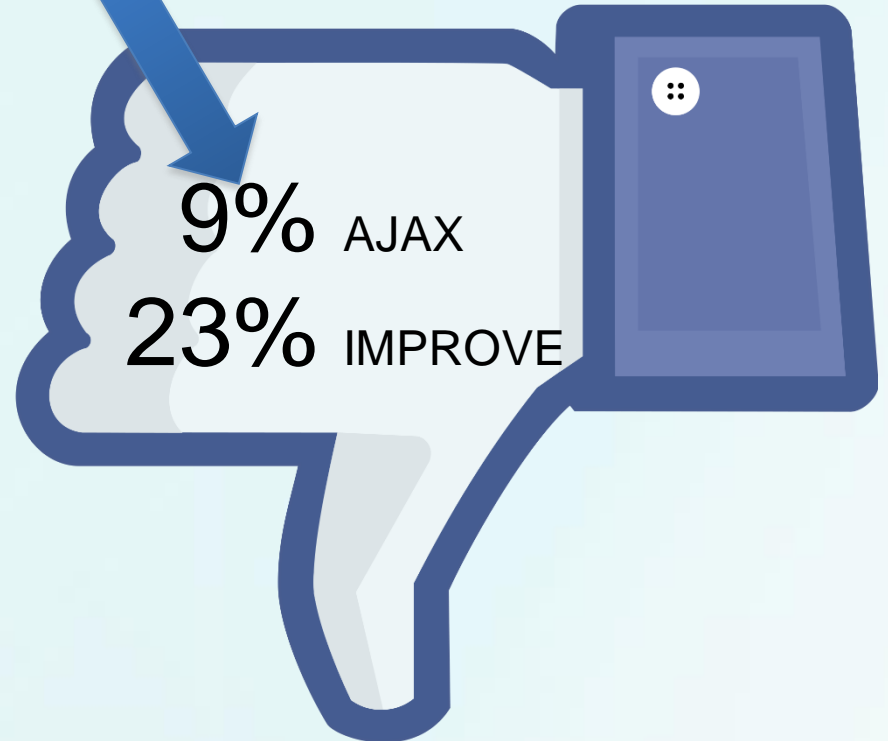
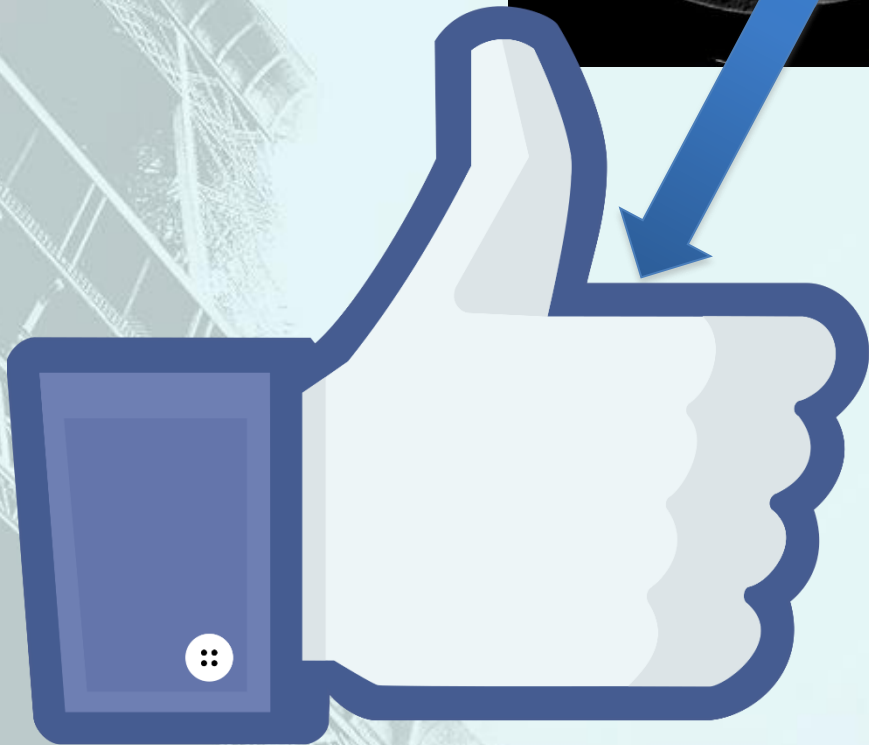
Other(s)

I do not have any potential conflict of interest



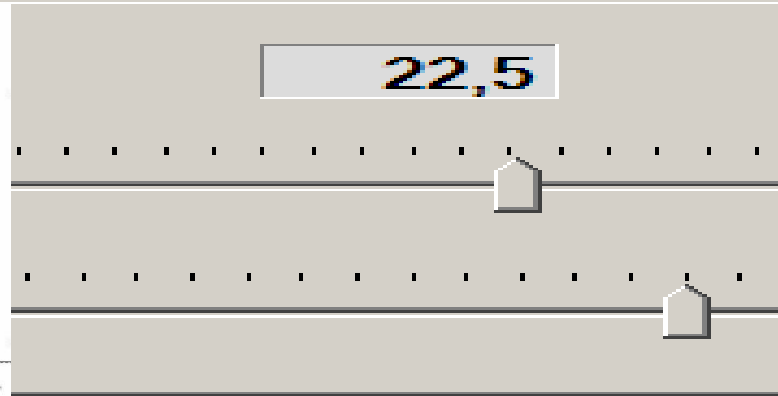
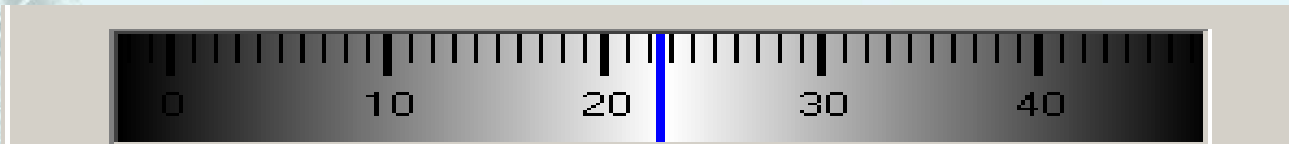
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# Which patients denied?





SHORT REPORT

# Fate of Patients Unwilling or Unsuitable to Undergo Surgical Intervention for a Ruptured Abdominal Aortic Aneurysm

S.C. van Beek <sup>a</sup>, A.C. Vahl <sup>b</sup>, W. Wisselink <sup>c</sup>, R. Balm <sup>a,\*</sup>, on behalf of the Amsterdam Acute Aneurysm Trial Collaborators <sup>d</sup>

<sup>a</sup> Department of Vascular Surgery, Academic Medical Center, Amsterdam, The Netherlands

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<sup>c</sup> Department of Vascular Surgery, VU University Medical Center, Amsterdam, The Netherlands

# RAAA NO OPERATION



## AJAX COHORT

**539** patients

**57** no operation (10%)

- 24 cardiac arrest/shock
- 19 patient/family decision
- 2 unknown
- 7 severe comorbidity
- 3 age
- 2 anatomic considerations



# RAAA NO OPERATION

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## AJAX COHORT

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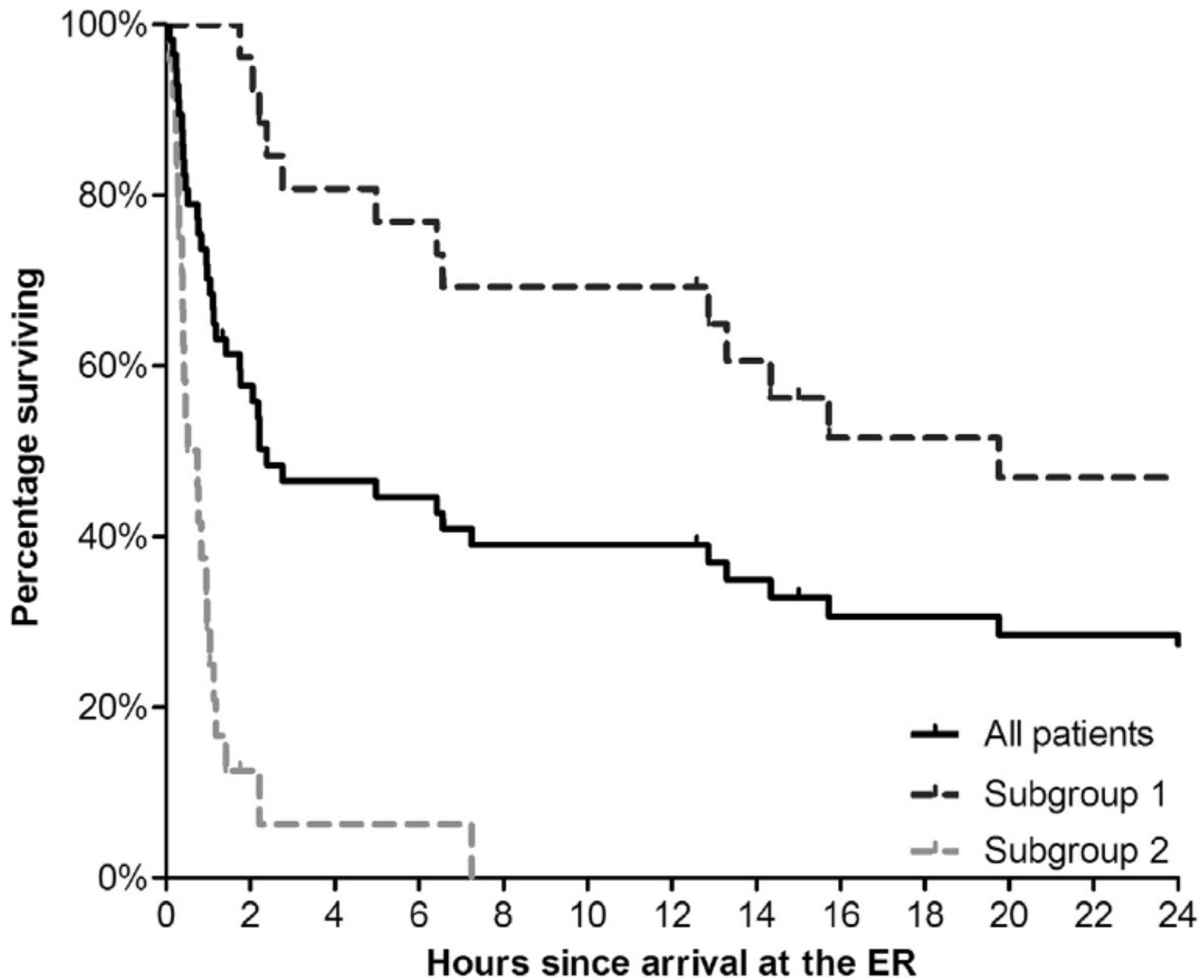
- 24 cardiac arrest/shock
- 19 patient/family decision
- 6 unknown
- 7 severe comorbidity
- 3 age
- 2 anatomic considerations





Patient characteristics	No surgical intervention			Surgical intervention ( <i>n</i> = 467)
	All patients ( <i>n</i> = 57)	Subgroup 1 ( <i>n</i> = 26)	Subgroup 2 ( <i>n</i> = 24)	
Age in years	83 (75–88)	88 (81–90)	78 (71–82)	76 (69–80)
Male:female	74%:26% (42:15)	19%:81% (21:5)	25%:75% (18:6)	81%:19% (378:89)
Previous history of cardiac disease	52% (25/48)	60% (15/25)	44% (7/16)	41% (193/452)
Previous history of cerebrovascular disease	15% (7/48)	16% (4/25)	19% (3/16)	15% (69/451)
Previously diagnosed with AAA	16% (8/49)	19% (5/26)	13% (2/16)	NA
Referred from other hospital	11% (6/57)	19% (5/26)	0	30% (140/467)
Systolic blood pressure in the ER in mmHg	90 (50–120)	115 (90–140)	50 (0–64)	106 (80–132)
Cardiopulmonary resuscitation	40% (23/57)	0	96% (23/24)	10% (48/447)
Haemoglobin in the ER in mmol/L	6.9 (5.6–7.6)	7.2 (6.2–7.9)	6.6 (4.9–7.5)	7 (5.9–8.0)
Creatinine in the ER in $\mu$ mol/L	130 (90–188)	125 (93–187)	131 (95–183)	107 (87–134)
CTA made	49% (28/57)	77% (20/26)	13% (3/24)	82% (385/467)





# Which patients should be definitely denied treatment for RAAA?



## Outcome of patients with ruptured abdominal aortic aneurysm after cardiopulmonary resuscitation

Greeven et al, Acta Chir Belg 2011

- 109 patients with RAAA
- 19 had CPR prior to surgery
- 30-day mortality 100%

# A ruptured abdominal aortic aneurysm that requires preoperative cardiopulmonary resuscitation is not necessarily lethal

Pieter P. H. L. Broos, MD,<sup>a,b</sup> Yannick W. 't Mannetje, MD,<sup>a,b</sup> Maarten J. A. Loos, MD, PhD,<sup>c</sup> Marc R. Scheltinga, MD, PhD,<sup>c,d</sup> Lee H. Bouwman, MD, PhD,<sup>c</sup> Philippe W. M. Cuypers, MD, PhD,<sup>a</sup> Marc R. H. M. van Sambeek, MD, PhD,<sup>a</sup> and Joep A. W. Teijink, MD, PhD,<sup>a,b</sup> *Eindhoven, Maastricht, Veldhoven, and Heerlen, The Netherlands*

- Multicenter retrospective analysis
- 167 had operative tx for RAAA
- 13 had CPR prior to surgery
- 30-day mortality 61% (vs 23%)
  
- EVAR 2 of 2 survived
- Open repair 3 of 11 survived

## Arbitrary Palliation of Ruptured Abdominal Aortic Aneurysms in the Elderly is no Longer Warranted

P. De Rango, G. Simonte, A. Manzone, E. Cieri, G. Parlani, L. Farchioni, M. Lenti, F. Verzini \*

Vascular and Endovascular Surgery, Hospital S.M. Misericordia, University of Perugia, Perugia, Italy

- Prospective database
- All patients arriving alive without DNR
- ~~Mental disease, dementia, old age, co-morbidities~~

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- 113 patients, avg 77 years
- 30-day mortality 39%
  - OR 41%
  - EVAR 36%
- in octagenarians 46%
  - OR 65 vs 28%  $p=0.01$
  - EVAR 41vs23% ns

# Predictors of peri-operative mortality



Covariate	OR	95% CI	<i>p</i>
Age <sup>a</sup> > 80 y	4.1	1.3–13.6	.02
Free rupture	5.0	1.3–19.9	.02
Cardiac disease	0.9	0.3–3.1	.89
Shock	0.8	0.2–3.6	.75
Endovascular	0.5	0.1–1.6	.21
Females	0.6	0.2–2.4	.47
GAS score	1.0	1.0–1.1	.06

# A comparison of open surgery versus endovascular repair of unstable ruptured abdominal aortic aneurysms

Prateek K. Gupta, MD,<sup>a</sup> Bala Ramanan, MBBS,<sup>b</sup> Travis L. Engelbert, MD,<sup>c</sup> Girma Tefera, MD,<sup>c</sup> John R. Hoch, MD,<sup>c</sup> and K. Craig Kent, MD,<sup>c</sup> *Memphis, Tenn; San Francisco, Calif; and Madison, Wisc*

- Trials did not specifically look at unstable patients
- NSQIP database 2005-2010
- All ruptures with ASA 4-5 + shock, intubation or coma

# A comparison of open surgery versus endovascular repair of unstable ruptured abdominal aortic aneurysms

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- 1447 patients: 65% OR →mort 26%  
34% EVAR →mort 14%

45% unstable: 71% OR →mort 52%  
28% EVAR →mort 35%



# Editor's Choice - External Validation of Models Predicting Survival After Ruptured Abdominal Aortic Aneurysm Repair **CME**

S.C. van Beek <sup>a</sup>, J.J. Reimerink <sup>a</sup>, A.C. Vahl <sup>b</sup>, W. Wisselink <sup>c</sup>, R.J.G. Peters <sup>d</sup>, D.A. Legemate <sup>a</sup>, R. Balm <sup>a,\*</sup>, on behalf of the Amsterdam Acute Aneurysm Trial Collaborators <sup>e</sup>

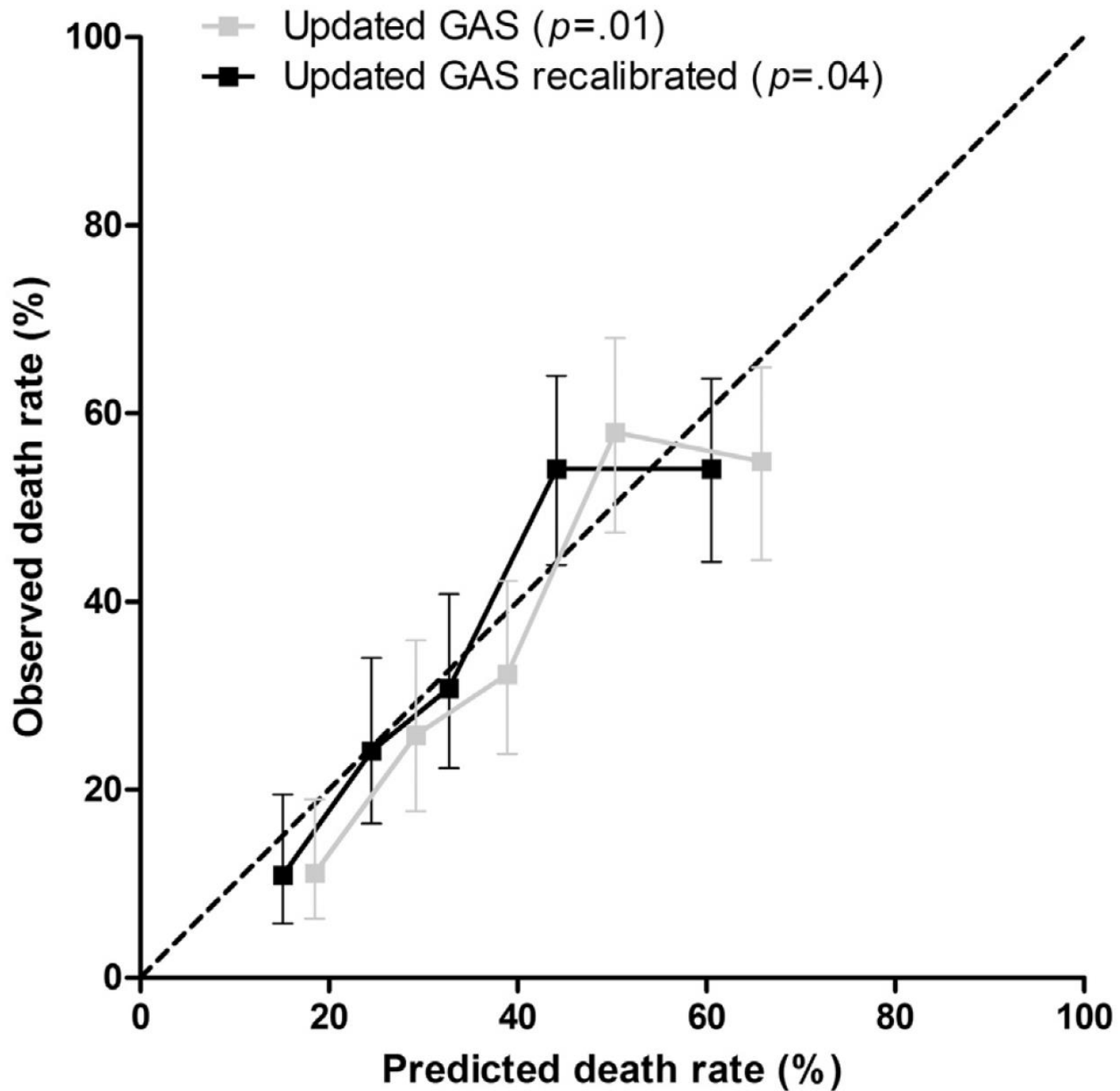
- Retrospective AJAX-cohort
- Glasgow Aneurysm Score
- Vancouver scoring system
- Edinburgh Ruptured Aneurysm Score
- Hardman index

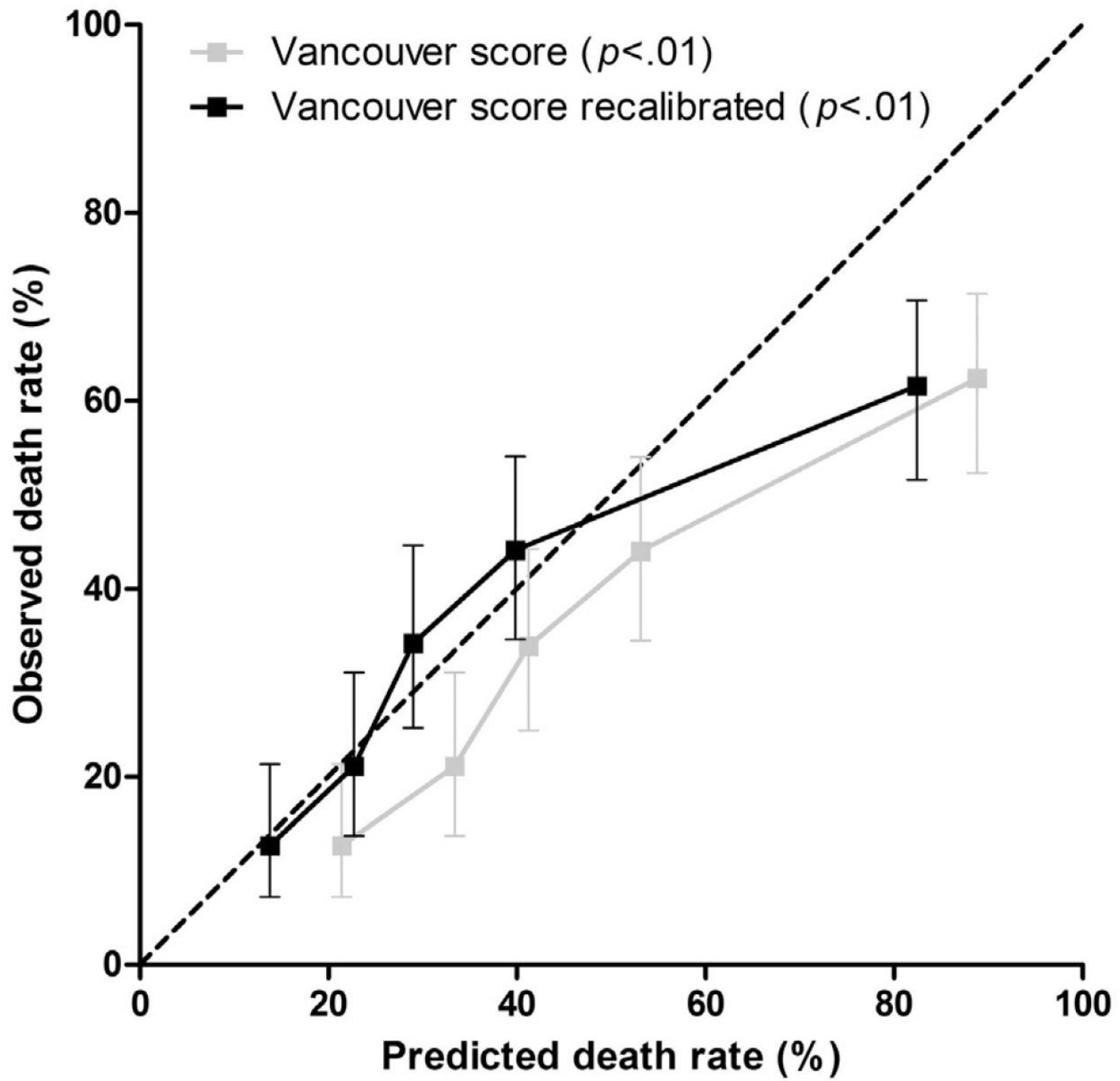


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	AUC
• Retrospective AJAX-cohort	
• Glasgow Aneurysm Score	0.71
• Vancouver scoring system	0.72
• Edinburgh Ruptured Aneurysm Score	0.58
• Hardman index	no EKG





## Editor's Choice - External Validation of Models Predicting Survival After Ruptured Abdominal Aortic Aneurysm Repair **CME**

S.C. van Beek <sup>a</sup>, J.J. Reimerink <sup>a</sup>, A.C. Vahl <sup>b</sup>, W. Wisselink <sup>c</sup>, R.J.G. Peters <sup>d</sup>, D.A. Legemate <sup>a</sup>, R. Balm <sup>a,\*</sup>, on behalf of the Amsterdam Acute Aneurysm Trial Collaborators <sup>e</sup>

- Glasgow Aneurysm Score best predictor of death after RAAA repair
- However it did not reliably predict patients with a > 95% mortality

# Development and External Validation of a Model Predicting Death After Surgery in Patients With a Ruptured Abdominal Aortic Aneurysm: The Dutch Aneurysm Score

G.C.I. von Meijenfeldt <sup>a</sup>, S.C. van Beek <sup>b</sup>, F. Bastos Gonçalves <sup>c,d</sup>, H.J.M. Verhagen <sup>d</sup>, C.J. Zeebregts <sup>a</sup>, A.C. Vahl <sup>e</sup>, W. Wisselink <sup>f</sup>, M.J. van der Laan <sup>a,\*</sup>, R. Balm <sup>b</sup>

<sup>a</sup> Department of Surgery (Division of Vascular Surgery), University Medical Center Groningen, University of Groningen, Groningen, The Netherlands

<sup>b</sup> Department of Surgery (Division of Vascular Surgery), Academic Medical Center, Amsterdam, The Netherlands

<sup>c</sup> Department of Angiology and Vascular Surgery, Hospital de Santa Marta, CHLC, Lisbon, Portugal

<sup>d</sup> Department of Surgery (Division of Vascular Surgery), Erasmus University Medical Centre, Rotterdam, The Netherlands

<sup>e</sup> Department of Surgery (Division of Vascular Surgery), Onze Lieve Vrouwe Gasthuis, Amsterdam, The Netherlands

<sup>f</sup> Department of Surgery (Division of Vascular Surgery), VU University Medical Center, Amsterdam, The Netherlands

- Prospective cohort of 10 hospitals, n=508
- DAS developed with multivar. log. regr. Analysis
- 4 pre-op variables:
  - age
  - BP
  - CPR
  - Hb

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- AUC DAS: 0.77 (AUC GAS: 0.72)
- If predicted mortality >80% → 83%



## Dutch Aneurysm Score

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Age (in years):

Lowest systolic blood pressure (in-hospital, pre-operative):

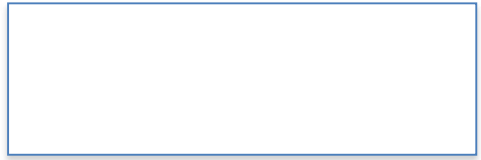
Cardiopulmonary resuscitation (no=0, yes=1):

Hemoglobine level in mmol/L (convert g/dL; multiply by 0.6206):

The DAS can reliably be used by clinicians to make a more informed decision in dialogue with the patient and their family whether or not to proceed with surgical intervention. Identification of low-risk patients with the DAS can potentially reduce turn-down rates.

The Dutch Aneurysm Score should be referenced as below:  
von Meijenfeldt GC, van Beek, S.C., Bastos Gonçalves, F., Verhagen, H.J., Zeebregts, C.J., Vahl, A.C., Wisselink, W., van der Laan, M.J., Balm, R. Development and external validation of a model predicting death after surgery in patients with a ruptured abdominal aortic aneurysm; the Dutch Aneurysm Score. Submitted.

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08 Do You Love Me Now.m4a







## Dutch Aneurysm Score

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Age (in years):

Lowest systolic blood pressure (in-hospital, pre-operative):

Cardiopulmonary resuscitation (no=0, yes=1):

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## Dutch Aneurysm Score:

45%

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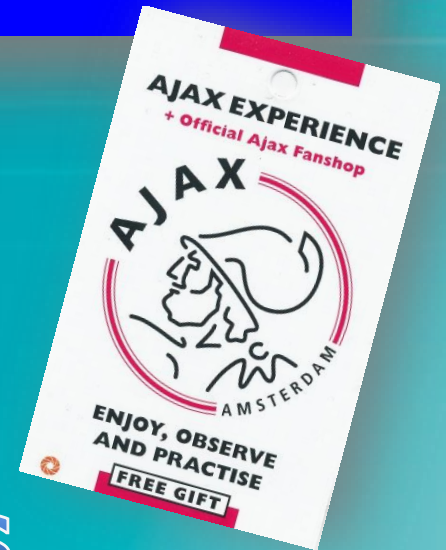
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# Conclusions

- Decision to deny is complex
- No reliable scoring system to predict 95-100% mortality
- Prediction models may be helpful to compare studies
- DAS seems the most reliable to date
- Personal opinion: all who come in alive with no DNR should at least be considered