

CONTROVERSIES ET ACTUALITES EN CHIRURGIE VASCULAIRE

CONTROVERSIES & UPDATES IN VASCULAR SURGERY

JANUARY 25-27 2018



MARRIOTT RIVE GAUCHE & CONFERENCE CENTER, PARIS, FRANCE

Which RAAA patients should be  
denied intervention  
and based on what?

Willem Wisselink for AJAX TRIAL COLLABORATORS



## Disclosures

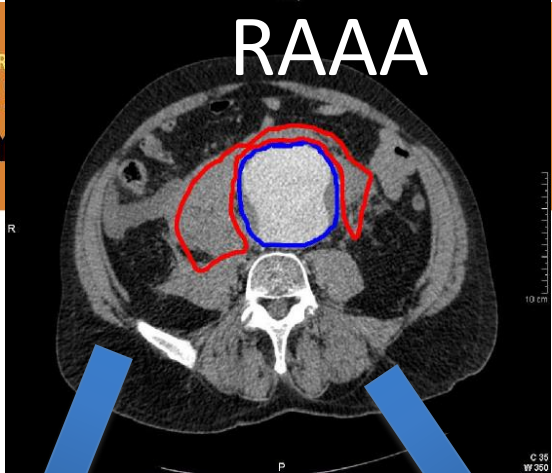
I have the following potential conflicts of interest to report:

- 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

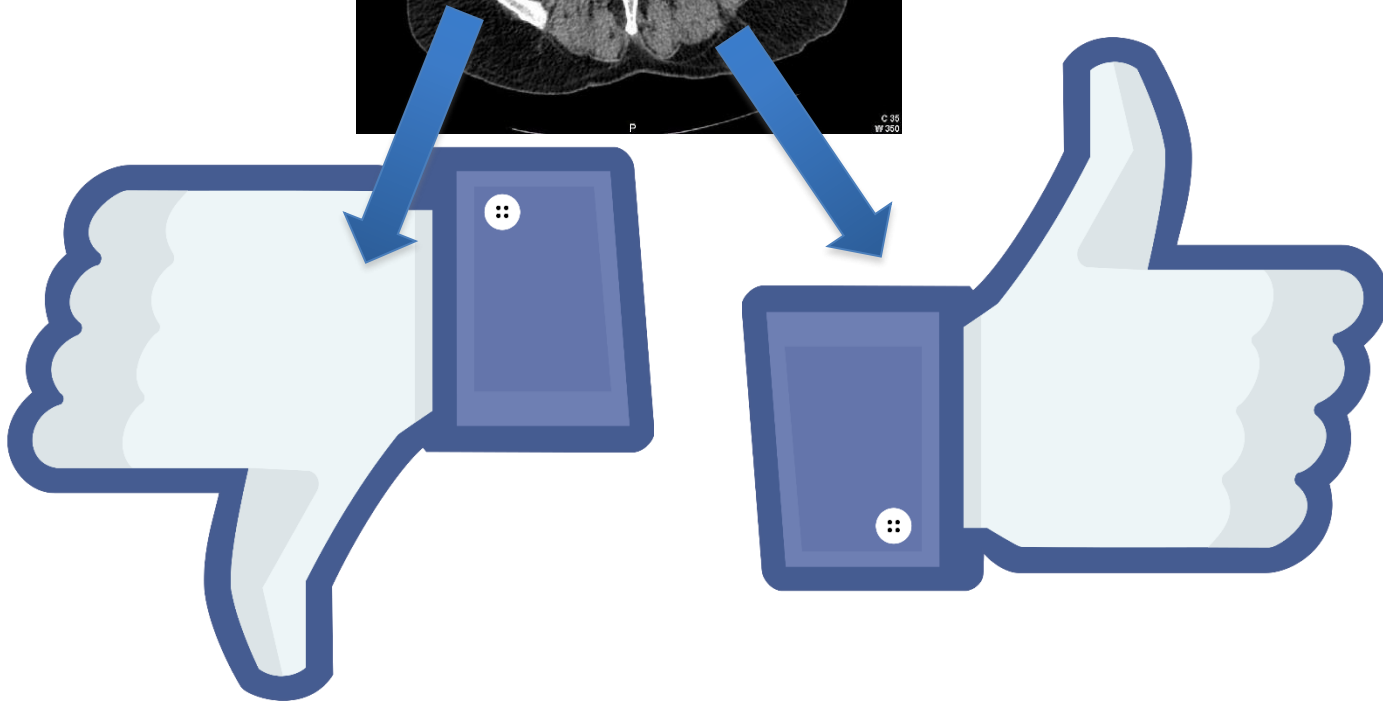


CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE  
CONTROVERSIES & UPDATE  
IN VASCULAR SURGERY

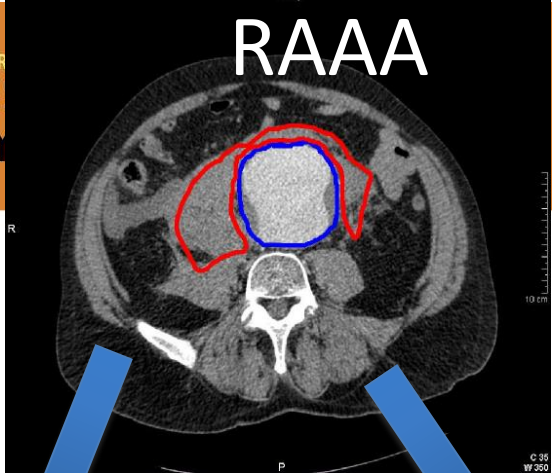
# RAAA



**JANUARY 25-27 2018**  
MARRIOTT RIVE GAUCHE & CONFERENCE CENTER  
PARIS, FRANCE [WWW.CACVS.ORG](http://WWW.CACVS.ORG)



# RAAA



**JANUARY 25-27 2018**  
MARRIOTT RIVE GAUCHE & CONFERENCE CENTER  
PARIS, FRANCE [WWW.CACVS.ORG](http://WWW.CACVS.ORG)

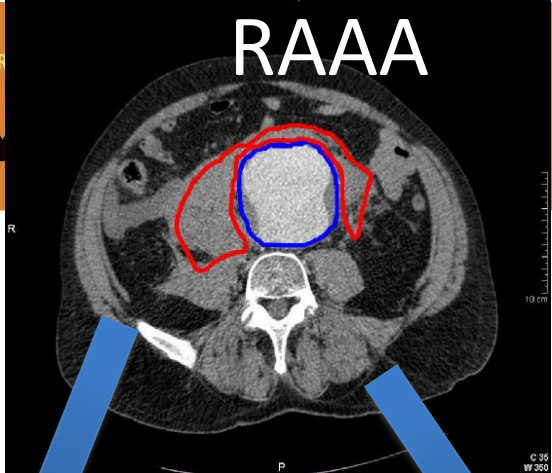


9% Ajax  
23% Improve  
20% USA  
42% UK

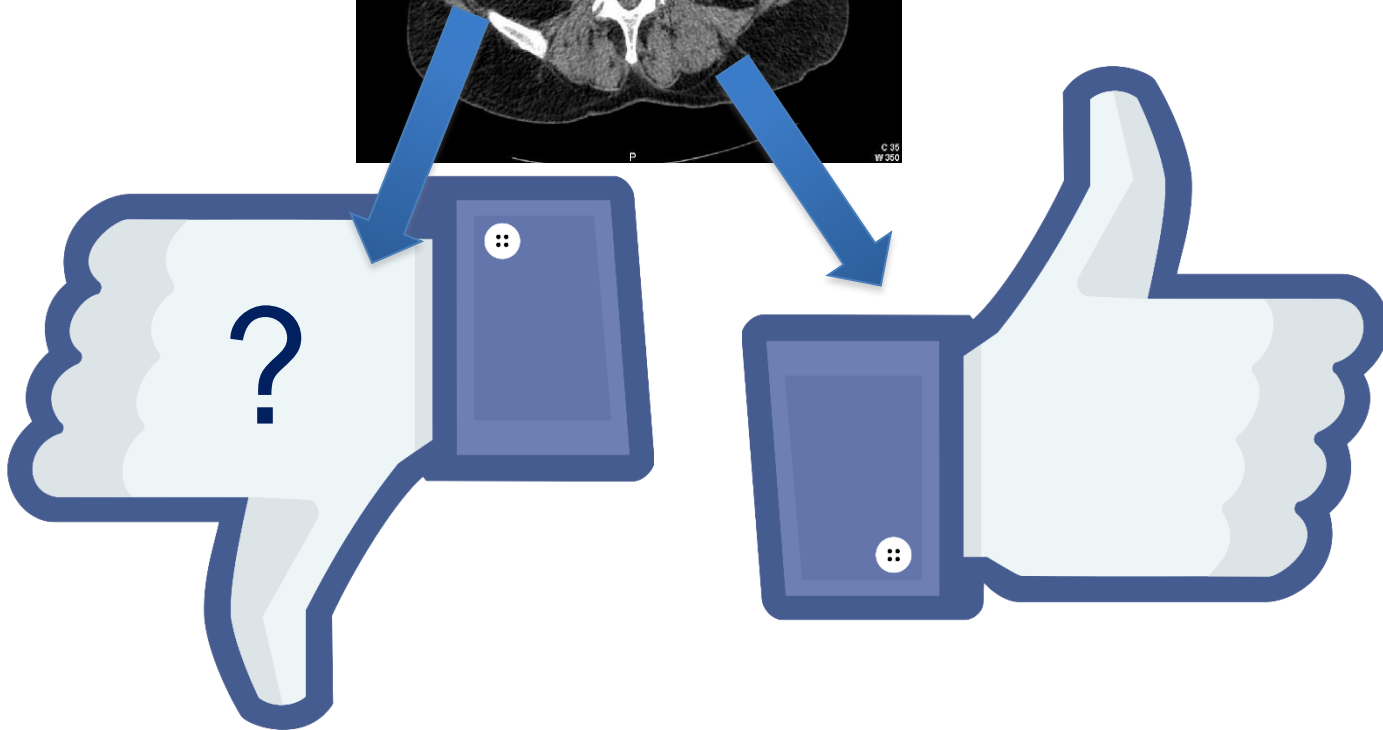


CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE  
CONTROVERSIES & UPDATE  
IN VASCULAR SURGERY

# RAAA



**JANUARY 25-27 2018**  
MARRIOTT RIVE GAUCHE & CONFERENCE CENTER  
PARIS, FRANCE [WWW.CACVS.ORG](http://WWW.CACVS.ORG)





# What happens if we deny repair?

## 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

<sup>b</sup> Department of Vascular Surgery, Onze Lieve Vrouwe Gasthuis, Amsterdam, The Netherlands

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



**539** patients

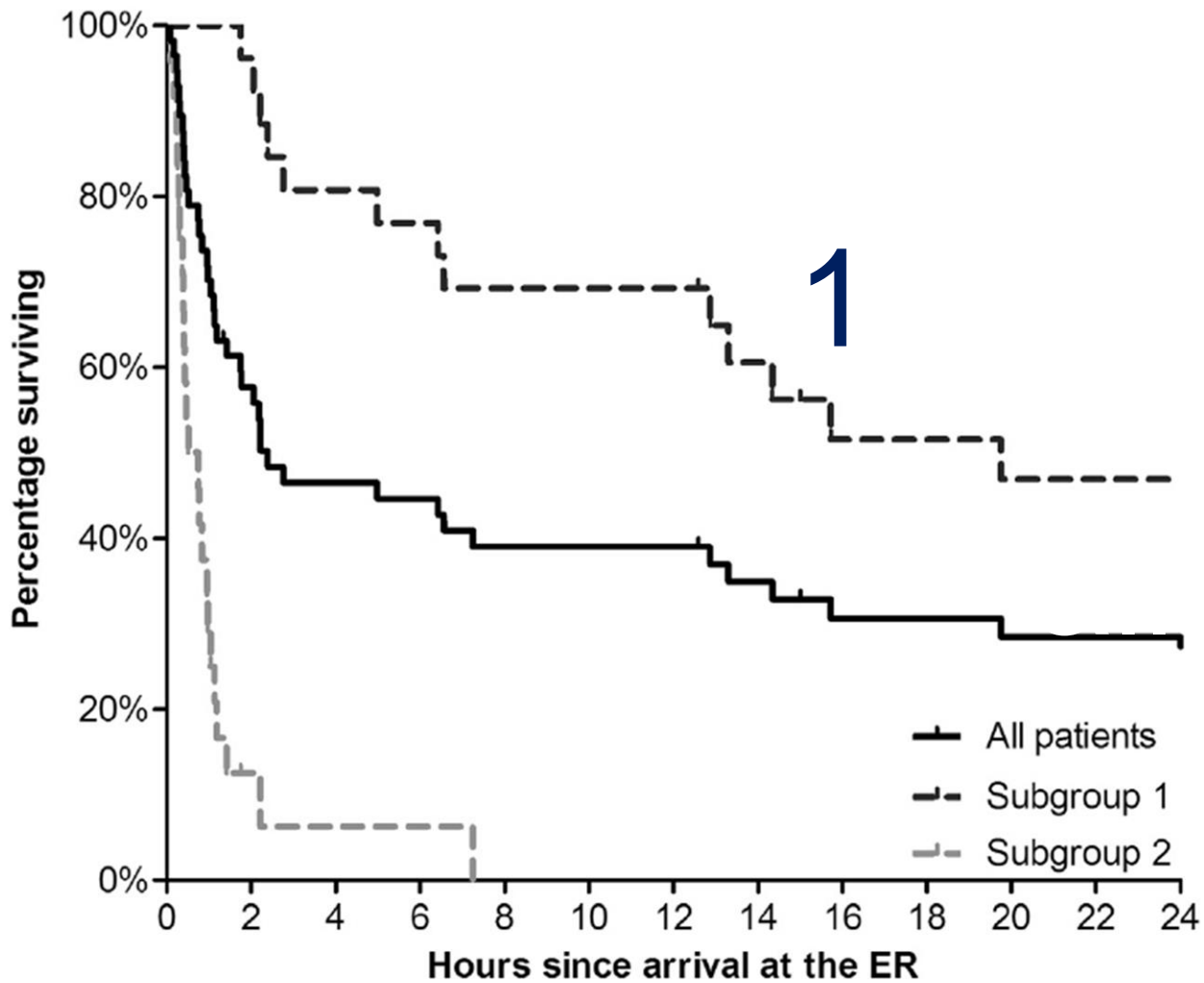
**57** no operation (12%)

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

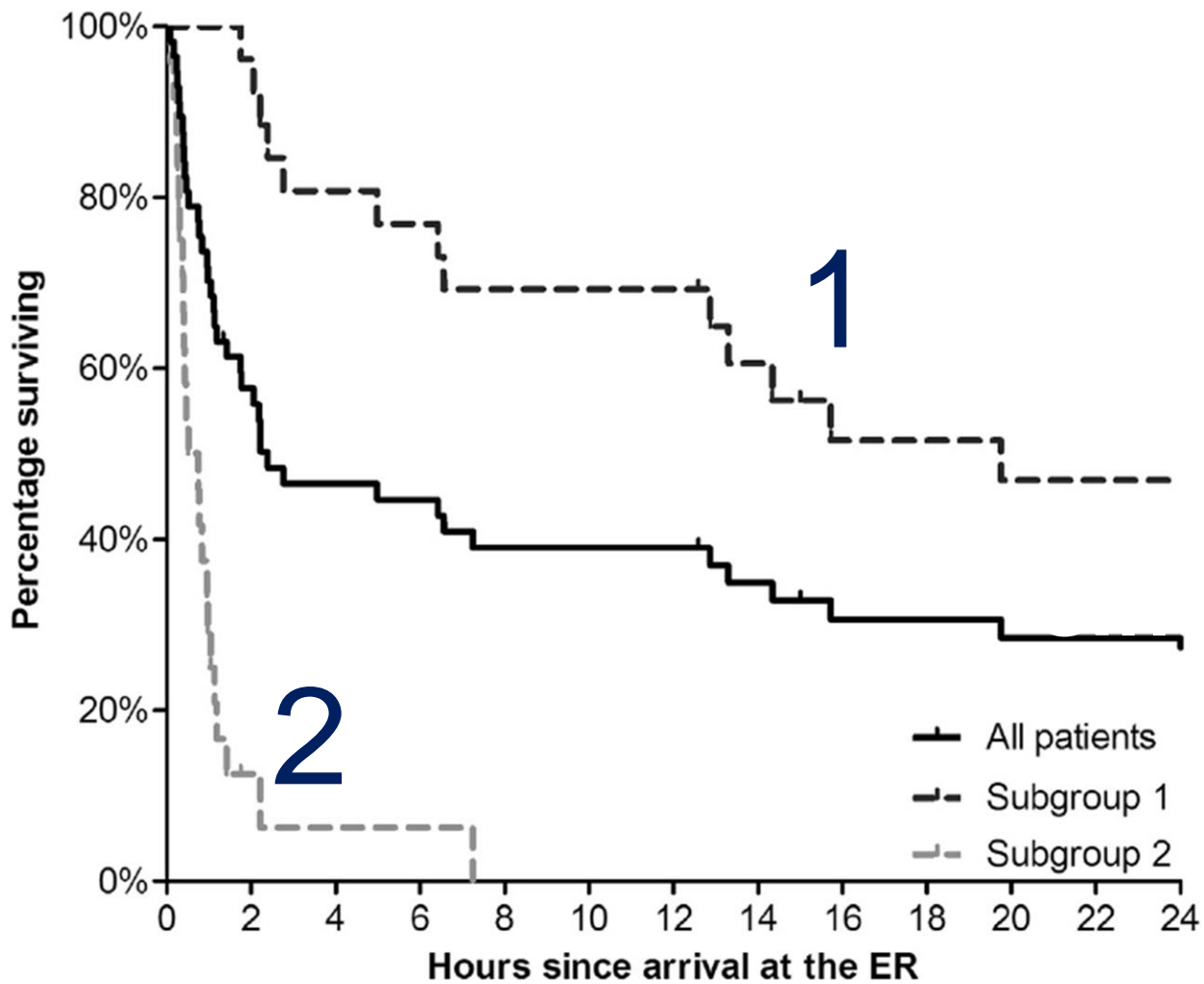
1

2











## **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 RAAA
- 13 had CPR prior to surgery
- 30-day mortality 61%



## 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, comorbidities

# 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

## mortality

all: 39%  $\longrightarrow$  OR 41%  
 $\longrightarrow$  EVAR 36%

> 80yo: 50%  $\longrightarrow$  OR 63 (vs 28%)  $p < 0,01$   
 $\longrightarrow$  EVAR 41 (vs 23%) ns



## 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

Covariate	OR	95% CI	p
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*

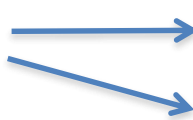
- Trials did not specifically look at unstable patients
- NSQIP database 2005-2010
- All ruptures with ASA 4-5 + shock, intubation or coma



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

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*

1447 patients

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



# 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



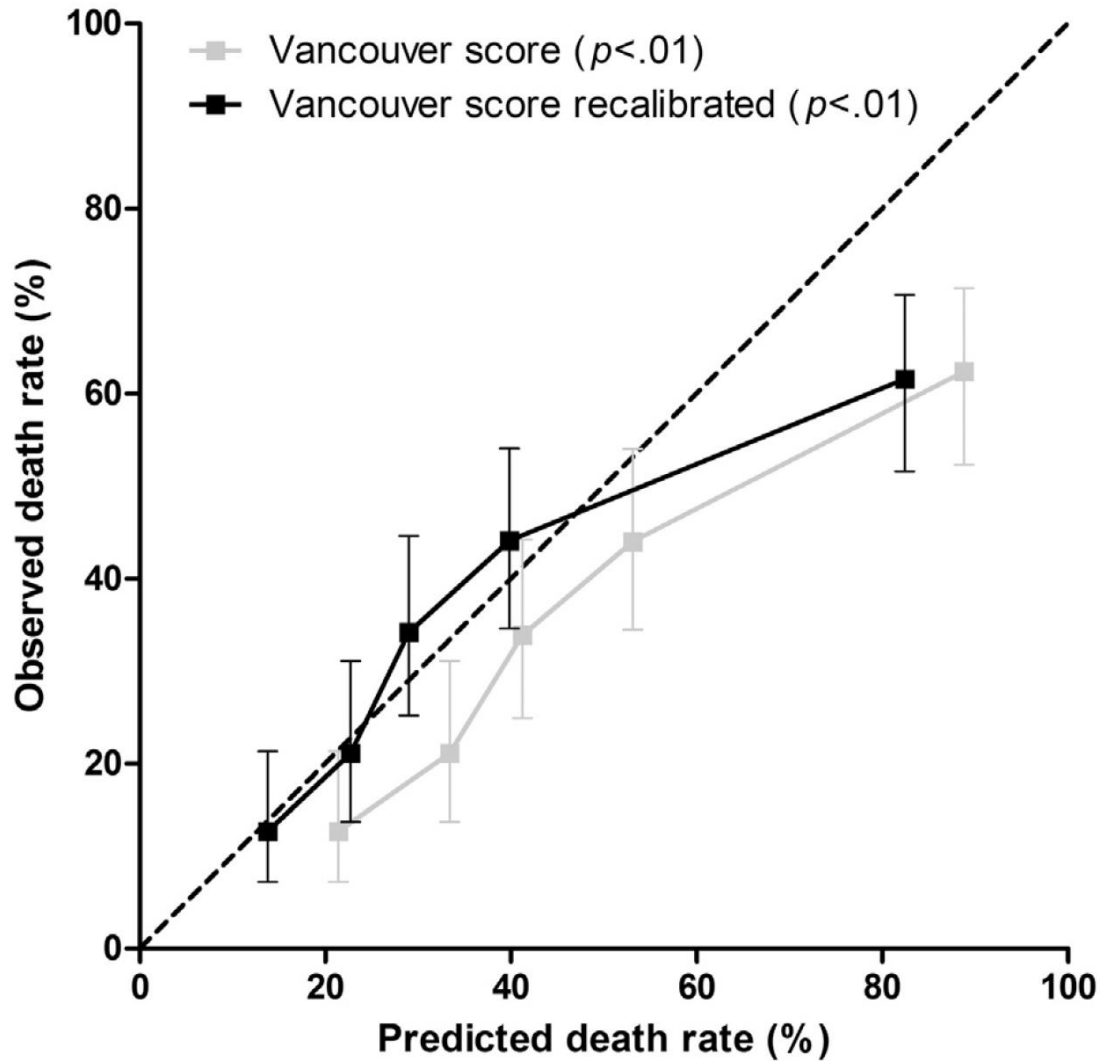
AUC

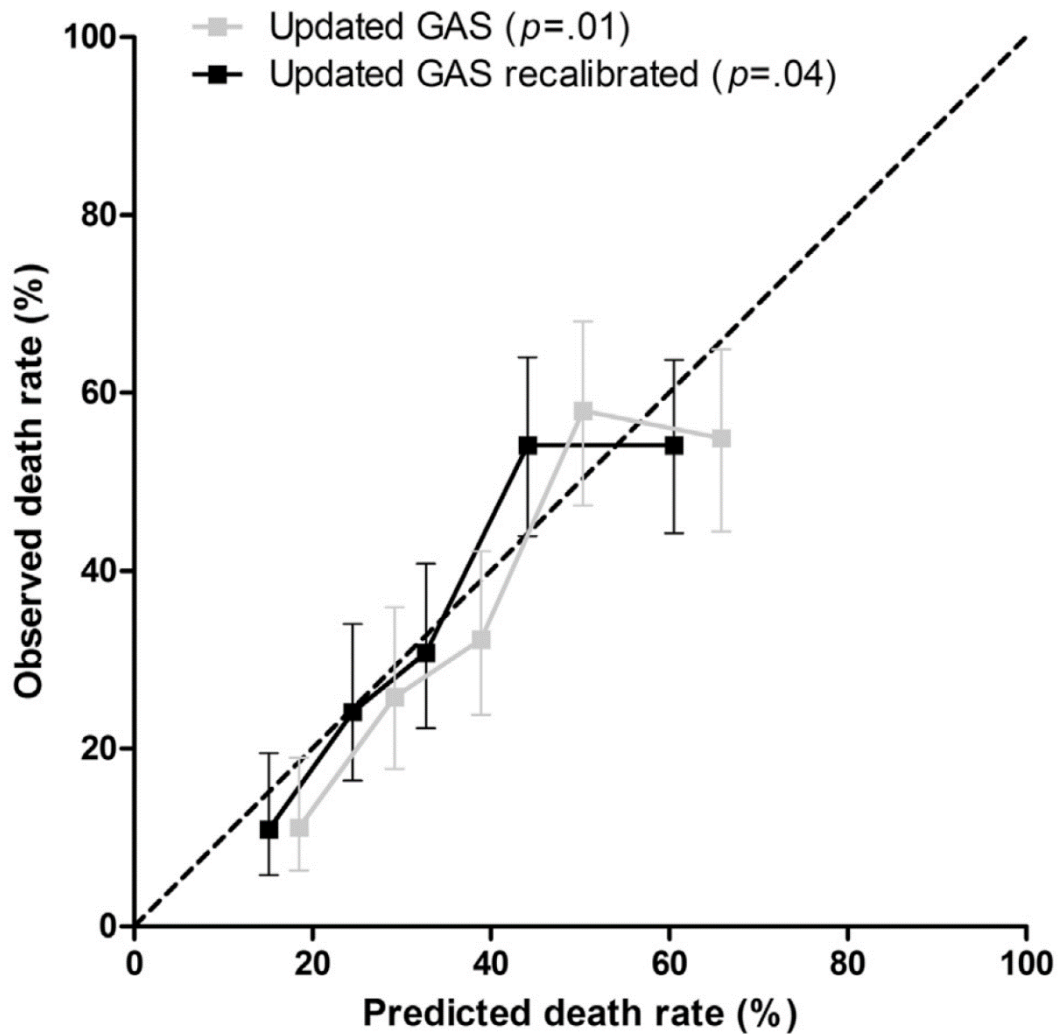
0.71

0.72

0.58

no EKG







## 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>

### Dutch aneurysm score DAS

- Prospective cohort of 10 hospitals, n=508
- 4 variables developed with multivariate logistic regression analysis:
  - age
  - BP
  - CPR
  - Hb



## 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>

### Dutch aneurysm score DAS

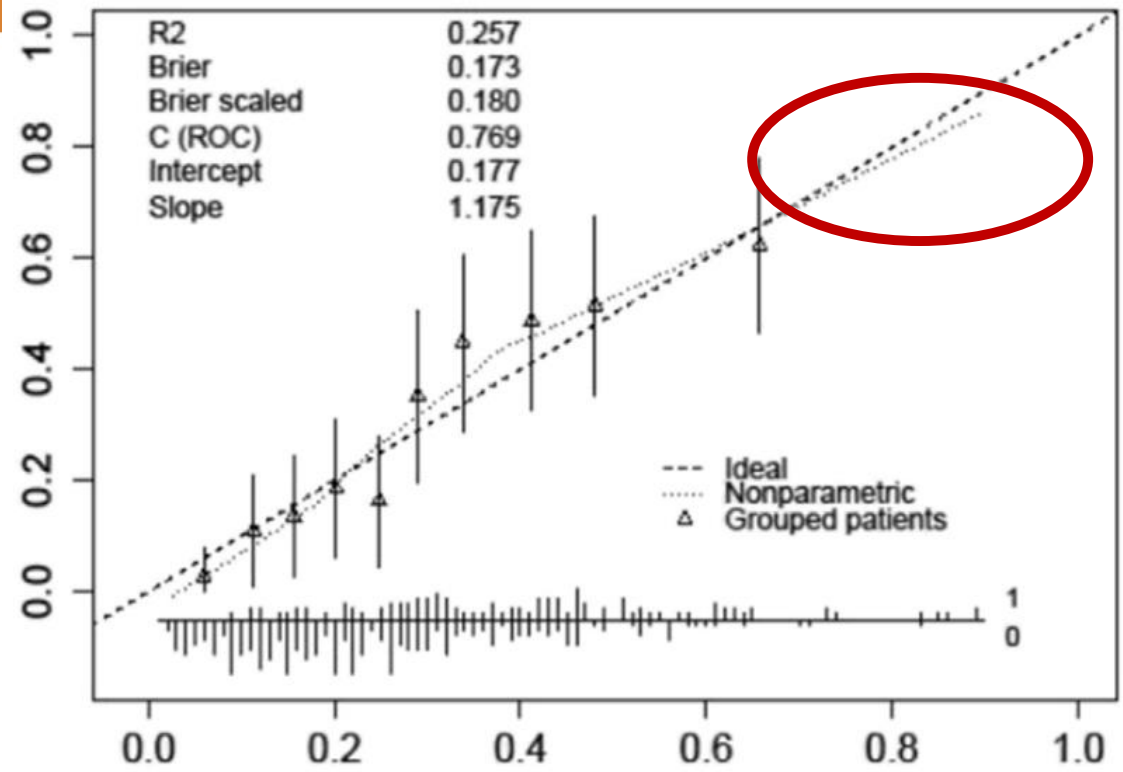
- Prospective cohort of 10 hospitals, n=508
- 4 variables developed with multivariate logistic regression analysis:
  - age
  - BP
  - CPR
  - Hb

AUC 78  
(GAS 71)

# Dutch Aneurysm Score



Actual




Predicted



Chrome File Edit View History Bookmarks People Window Help

Calculate DAS

https://www.dutchaneurysmscore.com/calculate-das



Dutch Aneurysm Score

Home [Calculate DAS](#)

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.

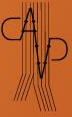
The Dutch Aneurysm Score should be referenced as below:  
von Meijenfeldt GC, van Beek, S.C., Bastos Gonçalves, F., Verhagen, H.J., Zeebregts, C.J., Vahl, A.C., Wisselink, W., van der Laan, M.J., Balm, R. Development and external validation of a model predicting death after surgery in patients with a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

[Calculate](#)

08 Do You Love Me Now.m4a








Chrome File Edit View History Bookmarks People Window Help

Calculate DAS

https://www.dutchaneurysmscore.com/calculate-das



Dutch Aneurysm Score

Home [Calculate DAS](#)

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):


[Calculate](#)

**Dutch Aneurysm Score:**  
**45%**

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.

08 Do You Love Me Now.m4a





## Conclusions

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

"I had never expected medicine to branch a lawless, uncertain world."

# The Laws of Medicine

FIELD NOTES FROM AN UNCERTAIN SCIENCE

by the Pulitzer Prize-winning author of  
The Emperor of All Maladies

A **TED** ORIGINAL

**SIDDHARTHA MUKHERJEE**

## LAW ONE

*A strong intuition  
is much more  
powerful than a  
weak test.*

I discovered the firm  
is exactly as it should  
the spring of 2001, t  
asked to see a man  
He was fifty-six y  
neighborhood t  
stone streets t  
Mr. Carlt  
essence. W  
patches, a  
but old r  
There  
irrita  
nor  
ti