

FACULTY OF MEDICINE AND HEALTH SCIENCES DEPARTMENT OF THORACIC AND VASCULAR SURGERY GHEENT UNIVERSITY HOSPITAL

SELECTION of PATIENTS with RUPTURED AAAs for NONINVASIVE (COMFORT) CARE based on SCORING SYSTEM or ADVANCED AGE is INAPPROPRIATE and UNFAIR to SOME PATIENTS

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CONFLICTS OF INTEREST

- Financial support provided by
 - Research grant. Senior Clinical Fellowship, Fellowship Fundamental Research
 - Innovation Fund, Ghent University Hospital
- Conflict of interest
 - Teaching and speaking – Medtronic
 - Co-investigator of funded research: Artivion, Bare peripheral vascular, Cook, Biotronik, BioGenCell

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GUIDELINES

esys

Recommendation 79 unchanged	Class	Level
Selection of patients with ruptured abdominal aortic aneurysm for palliation based entirely on scoring systems or solely on advanced age is not recommended .	III	B

SVS Society for Vascular Surgery

ered for transfer and treatment. Some patients experiencing a ruptured AAA may not be medically fit to undergo open repair and at the same time are not anatomically suitable for endovascular repair. The urge to offer endovascular repair to patients anatomically unsuitable for such repair should be strongly resisted. Preoperative predictors of death after open repair include age >76 years, serum creatinine concentration of >2.0 g/dL, pH <7.2, and blood pressure <70 mm Hg at any time. Whereas these risk factors require more robust validation when repair is uniformly fatal. As surgical comorbidities and hemodynamic issues with the receiving vasc is necessary. Ongoing cardiac contraindication to transfer of these patients.

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NON CORRECTIVE TREATMENT OF RAAA

Pts with rAAA admitted to hospital 2005 – 2010

11 799 UK; 23 838 USA

Non corrective treatment = rAAA but no procedural code for OSR or EVAR

Men England, Women England, Men USA, Women USA

Age group (years)

karthikesalingam A et al. Le

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1. TURN DOWN RATE OF RAAA

- Swiss 2009-2018: multicentre - 1 798 rAAA
 - 675 conservative treatment **37.5%**
 - 1 123 surgical repair mortality 23.1%
 - 733 40.8% OAR 390 21.7% EVAR
- USA Harborview single centre
 - 2002 – 2007 (pre-EVAR) 136 rAAA
 - 3 comfort treatment **2.2%**
 - 2007 – 2013 (pre HRS) 163 rAAA
 - 11 comfort treatment **6.7%**
 - 30d Mortality 109/195 55.9% OAR 23/90 25.6% EVAR
 - 2013- 2018: modern area (HRS) 118 rAAA
 - 12 comfort treatment **10.2%**
 - 30d mortality 18/45 40 % OAR 20/61 32.8% EVAR

L Meuli et al. Eur J Vasc Endovasc Surg 2023; 65: 484-492

JF Hemingway et al. J Vasc Surg 2021; 1508 – 1518



Distribution of HRS among 25 patients treated with comfort measures only

Frequency

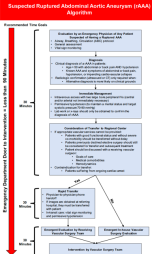
Harborview Risk

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WHY ARE RAAA PTS TURNED DOWN FOR REPAIR?






A. TURN DOWN DUE TO ... LOGISTICS



Centre dependent
SOP rAAA
Toolkit
SKILLS
TRAINED TEAM

- Anaesthesiology
- A&E dept
- Geriatrician
- Interventional Radiologist
- Intensive care staff
- Nurses
- Radiology technicians
- Vascular Surgeon
- ...






B. TURN DOWN DUE TO ... PT'S CHOICE, MENTAL AND/OR PHYSICAL STATUS, CPR ...

Variable	Head operated (n = 138)	Patients turned down for repair (n = 47)	p value	EVAR (n = 49)	OR (n = 81)	p value
Pre-operative AHA - NY rating	80/107 (24.1)	26/44 (25)	.01	27/50	35/56 (25)	.26
Preoperative GCS	7/64	11/41 (27)	<.001	3/16	4/31 (13)	.70
ASA	3/22	2/13		2/10	1/21	
ASA II-III	99/104	37/46		44/49	39/54	
Unknown	1/50	1/10	.77	0/10	1/21	
Preoperative IAS - ACS minimal	28/107 (23.4)	12/23 (52)		31/39	17/28 (28)	.30
Type of anesthesia	87/29 (3)	NA		26/50	64/100	<.001
General	31/28 (6)	NA		23/47	6/88	

Four centres
Retrospective, 2013 - 2018
Netherlands
47/157 rAAA octogenarians

Reason for turn down	Patients turned down for repair (n = 47)
Already diagnosed with AAA, previously decided not to have surgery	9 (19)
Preference of patient	14 (30)
Medical reason (profound shock and/or CPR)	11 (23)
Medical reason (multi-comorbidity, functional state)	13 (28)



C. TURN DOWN DUE TO ... AGE 80+

Study	Study design	Inclusion period	Origin	Total no. of octogenarians	Study	EVAR	OR	Relative 90 day mortality risk	RR (95% CI)	Weight (points)	
Strobel, 2014*	RO, VD	1999-2011	UK	EVAR: 0 OR: 718	Edwards, 2014*	104	440	1084	3053	0.23 (0.04, 0.76)	58.0%
Edwards, 2014*	RO, VD	2005-2011	The Netherlands	EVAR: 440 OR: 3023	De Rango, 2004**	13	31	24		0.47 (0.04, 1.13)	13.7%
Edwards, 2014*	RO, VD	2005-2011	The Netherlands	EVAR: 3 OR: 9	Ortiz, 2012**	90	383	122	276	0.40 (0.18, 0.92)	27.4%
Edwards, 2014*	RO, VD	2005-2011	The Netherlands	EVAR: 3 OR: 9	Van Bockel, 2018*	148	436	282	188	0.79 (0.40, 1.52)	19.4%
Edwards, 2014*	RO, VD	2005-2011	The Netherlands	EVAR: 440 OR: 3023	Van Bockel, 2018*	152	149	225		0.14 (0.00, 0.28)	12.4%
Edwards, 2014*	RO, VD	2006-2015	Italy	EVAR: 31 OR: 24		1933	5453		0.58 (0.53, 0.64)	100.0%	
Edwards, 2014*	RO, PR	2003-2014	USA	EVAR: 363 OR: 395					0.50 (0.38, 0.67)	100.0%	
Edwards, 2014*	RO, PR, N, V	1994-2014	Sweden	EVAR: 270 OR: 1258							
Edwards, 2014*	RO, PR, V	2005-2014	USA	EVAR: 400 OR: 398							
Edwards, 2014*	RO, N, V	2005-2015	Germany	EVAR: 199 OR: 211							

Random effect model
Heterogeneity: I² = 93%, τ² = 0.1093, p < .001

Overall EVAR → Overall OR



Roccazzola L et al. Eur J Vasc Endovasc Surg 2020; 59: 16-22

OCTOGENARIANS OFFERED TREATMENT 80+




	Age 80-84 y (n = 68)	≥85 y (n = 42)	p*
Death			
During surgery	2 (3)	1 (2)	.86
30 d	19/67 (28)	20 (48)	.041
90 d	23/67 (34)	21/40 (52)	.065
1 y	28/62 (45)	22/38 (58)	.22
2 y	35/56 (63)	24/37 (65)	.62
Pre-operative ambulatory state			.37
Independent	55 (81)	35 (83)	
Dependent	8 (12)	2 (5)	
Unknown	5 (7)	5 (12)	
Pre-operative living situation			.52
Home	64 (94)	41 (98)	
Nursing home	2 (3)	0 (0)	
Unknown	2 (3)	1 (2)	
Living situation after discharge			.47
Home	32 (68)	13 (39)	
Nursing home	15 (32)	9 (41)	
Living situation after rehabilitation			.80
Home	38 (81)	19 (86)	
Nursing home	7 (15)	2 (9)	
Unknown	2 (4)	1 (5)	

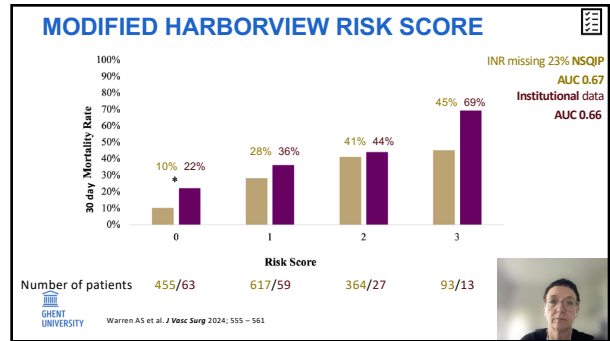
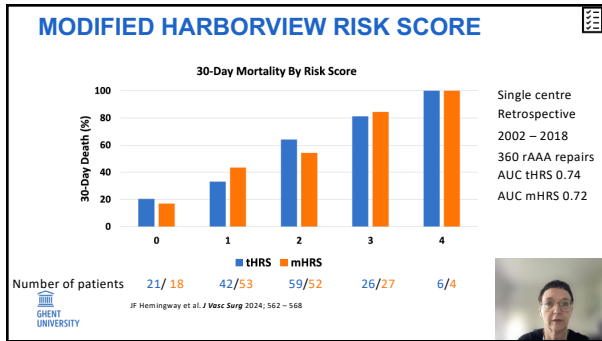
Four centres
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2. What may be the Role of SCORING SYSTEMS?

- What are we trying to predict?
- Easy to calculate
 - Non-invasive or minimally invasive, rapidly attainable data points
- Highly accurate predictor
- In multiple patient populations



Role of SCORING SYSTEMS?

- Reduce turn down rate!
- Enhance risk assessment
- Facilitate communication

Wise ES et al. J Vasc Surg 2015; 62(1): 8 – 15

4. PROVIDE PERSONALISED CARE

24/24 : 7/7

5. TO IMPROVE SELECTION OF RAAA PATIENTS EVALUATE WHAT HAPPENS DAILY !

"Machine learning must be supervised to ensure optimal outcomes.
While the human brain does not have the computational capacity to learning from massive data sets, humans still retain an advantage in making sense of the results."
J Wall et al. J of Pediatr Surg 2020; 547-550