Cirugía cardiaca en pacientes de edad avanzada ¿Un cambio de paradigma?

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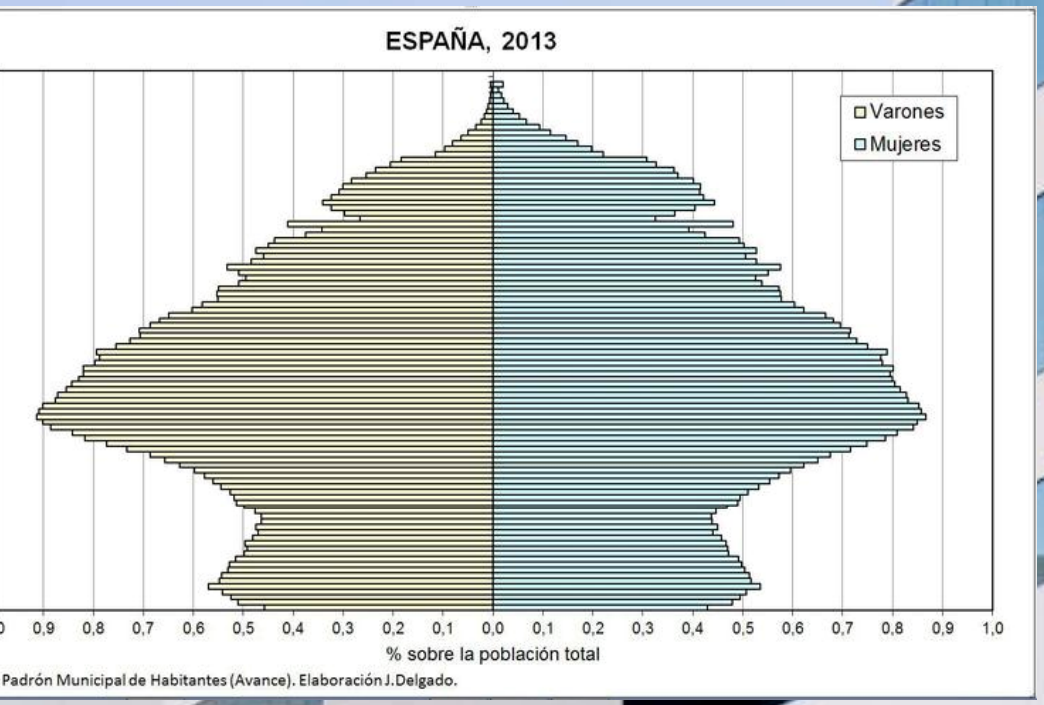
València 2014

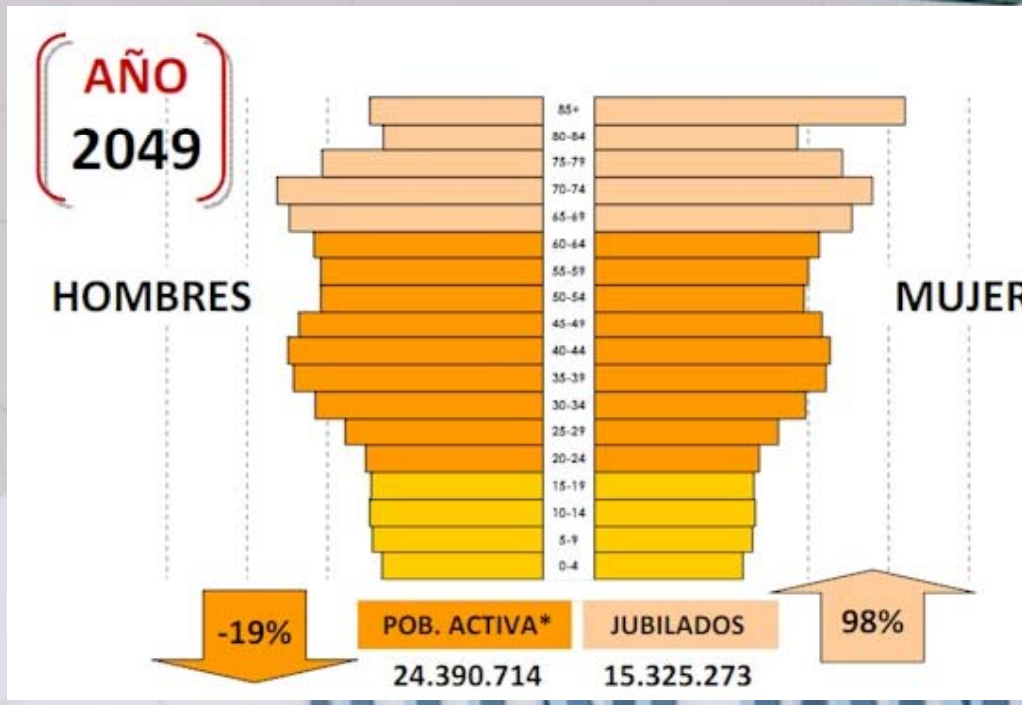
CAMBIOS DE PARADIGMA

mbio en el perfil sociodemográfico de la población

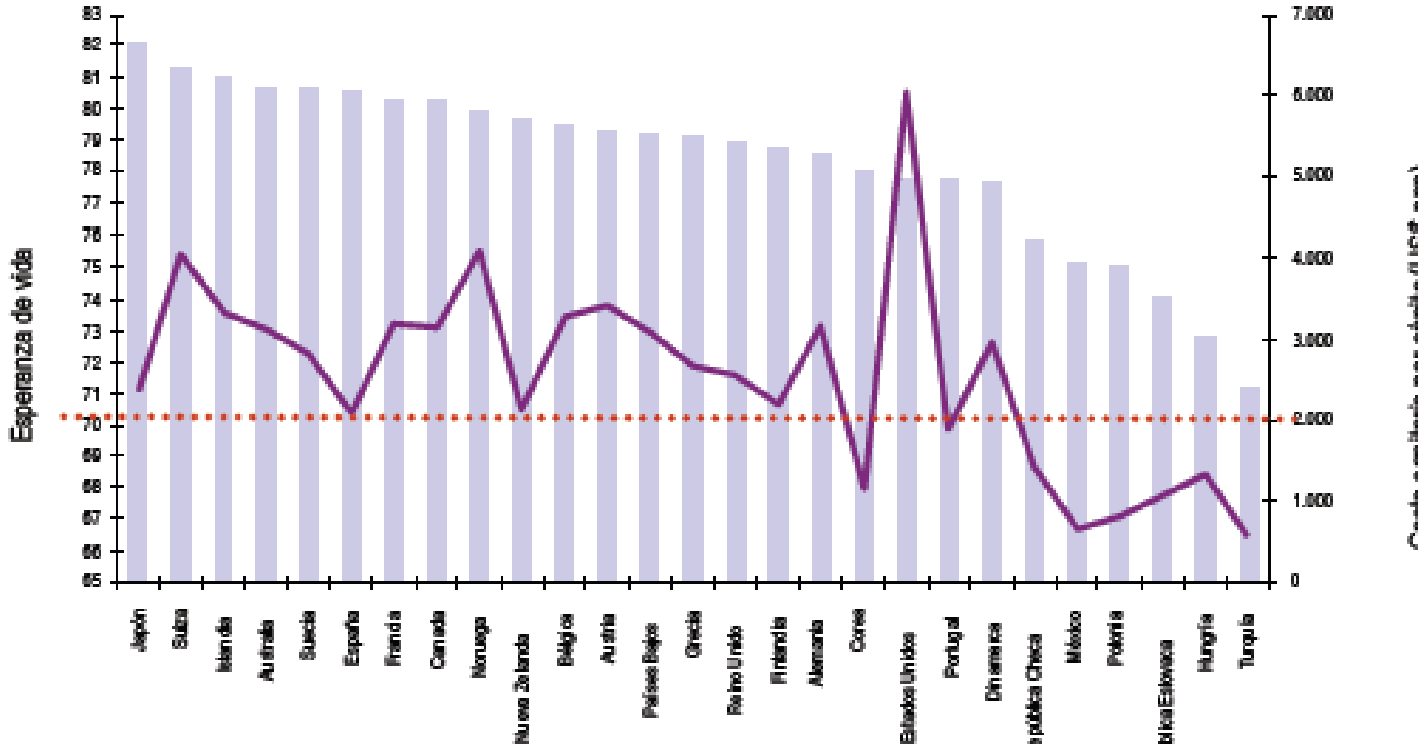
olución de los resultados quirúrgicos y de las escalas de ri

pacto del desarrollo tecnológico





ESPERANZA DE VIDA Y GASTO SANITARIO



Problemas del sistema de salud

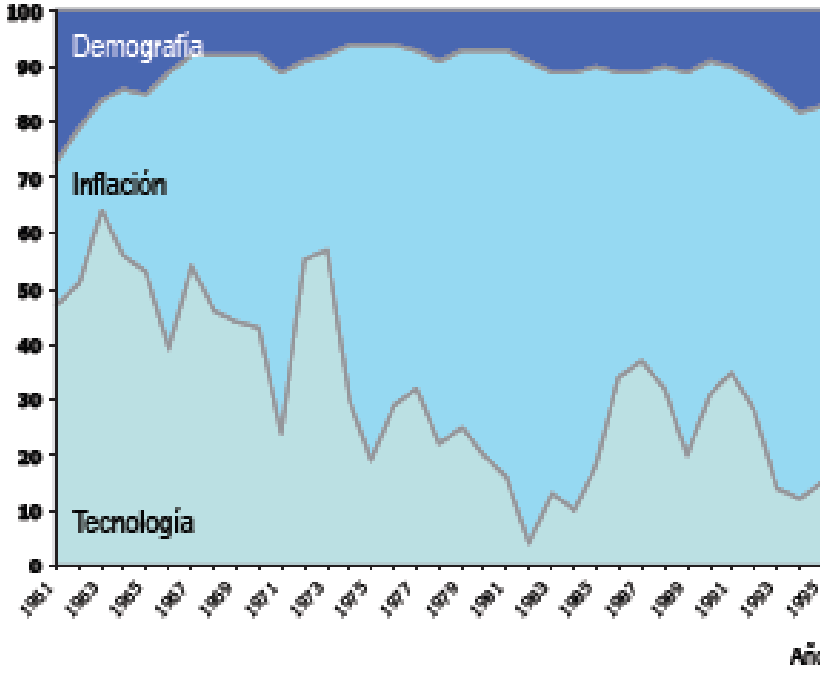
s económica

ejecimiento progresivo de la población

arrollo acelerado de la tecnología

ento de las expectativas de los ciudadanos

Porcentaje de los componentes que explican el incremento del gasto sanitario, USA 1962-1998



Fuente: *Mohr PE, Mueller C et al. The Impact of Medical Technogy on Future Health Care Cost. The projet Ho*
to Health Affairs. 2001

Cambio epidemiológico: envejecimiento y cronic

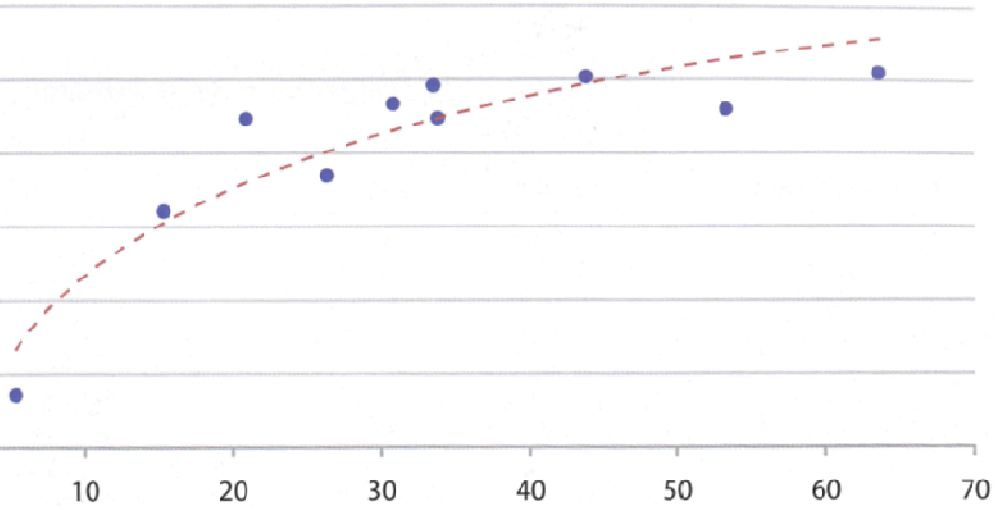
CAMBIOS DE PARADIGMA

mbio en el perfil sociodemográfico de la población

olución de los resultados quirúrgicos y de las escalas de ri

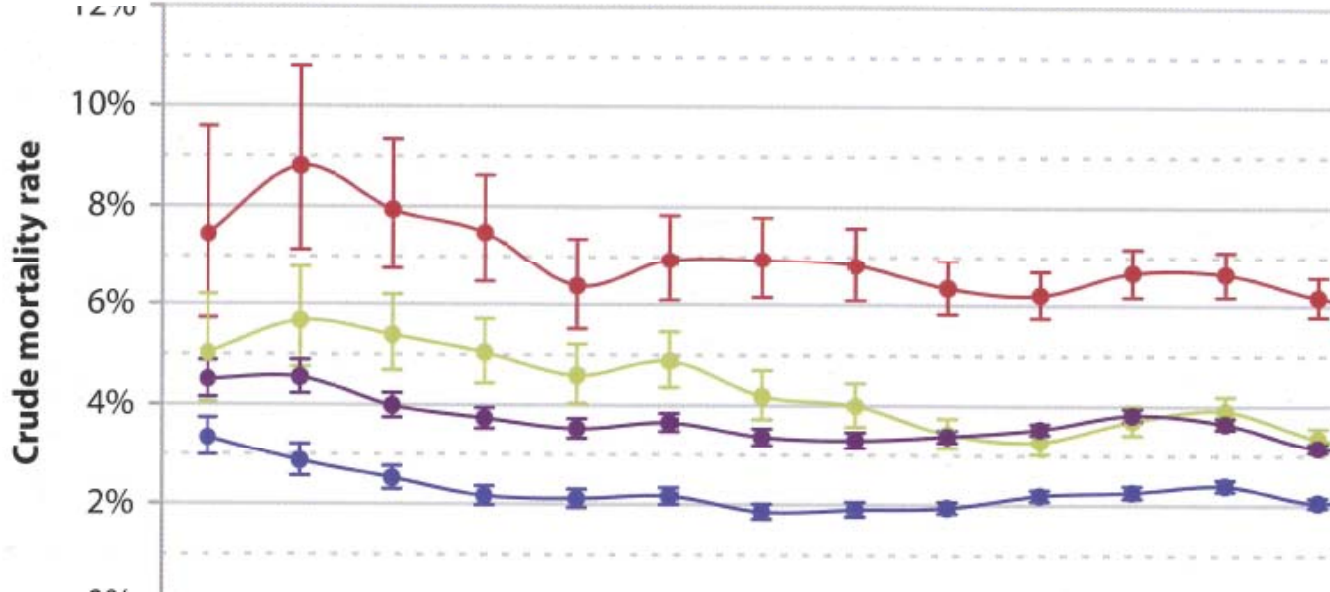
pacto del desarrollo tecnológico

relationship between WHO-reported Gross National Income *per* capita and the
verage age of patients undergoing isolated AV surgery in the EACTS database

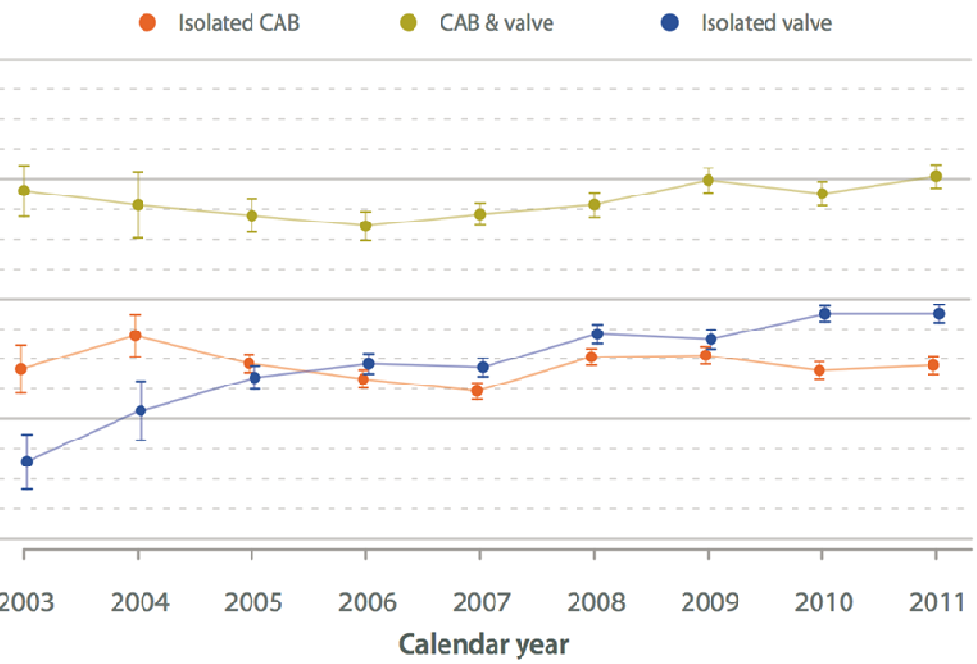


Aumento de la edad media del pacie
Disminución progresiva de la mortali

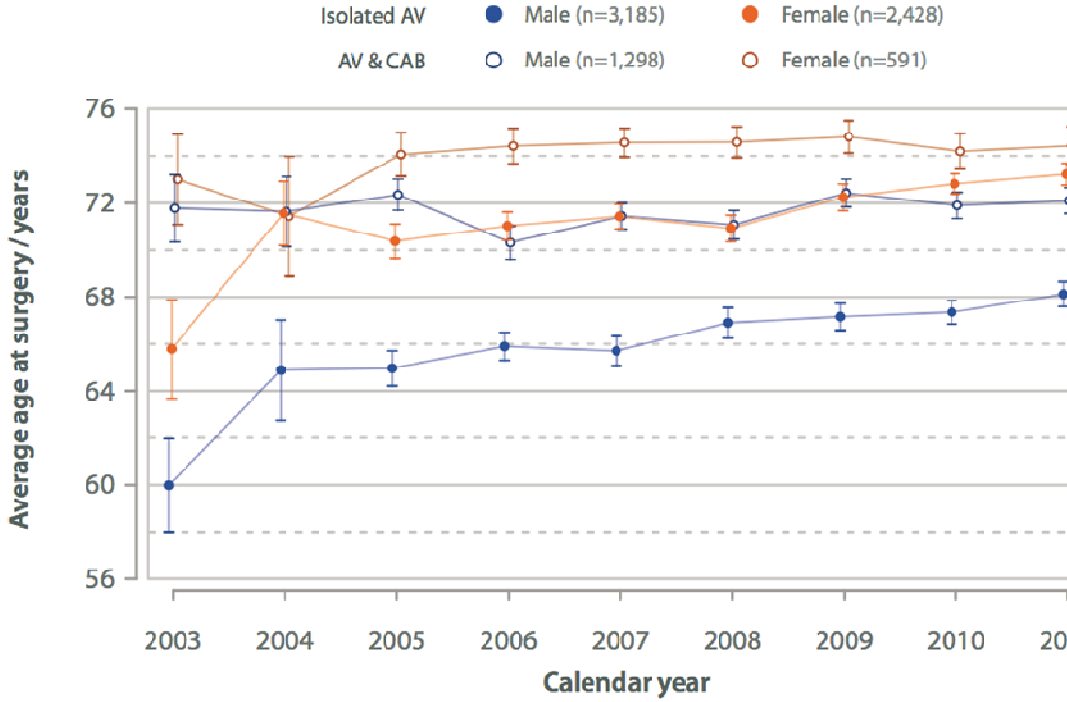
Trends in mortality for the major procedure groupings



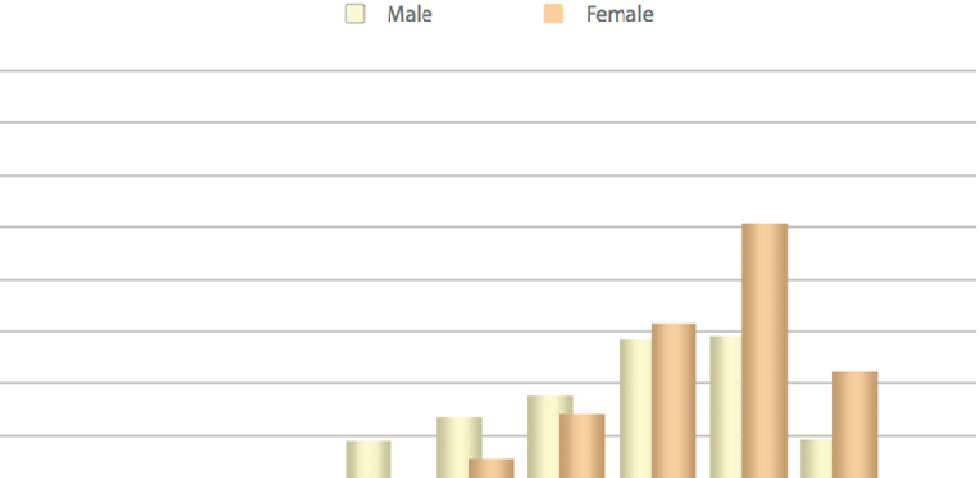
Cirugía cardiaca en España:
Cambios de la edad de los pacientes con el tiempo (n=22,737)



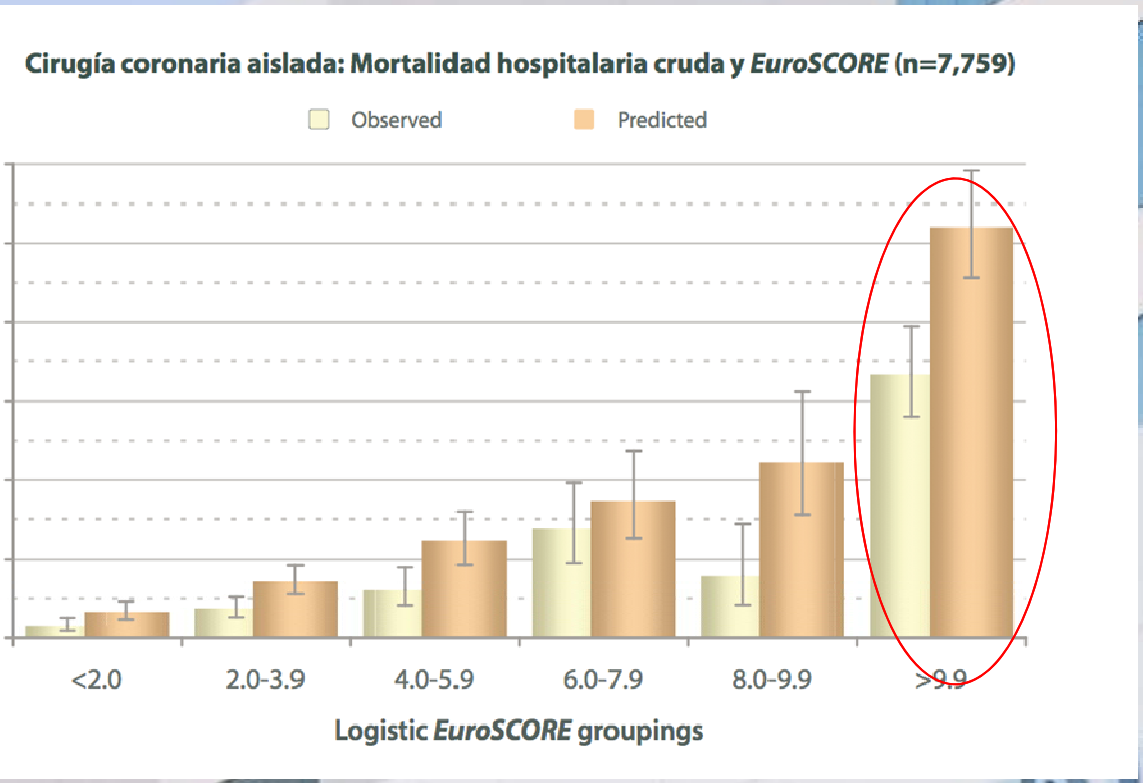
Cirugía valvular aórtica: Cambios de la edad con el tiempo



Cirugía valvular aórtica aislada:
Porcentaje de pacientes operados por cada grupo de edad y sexo

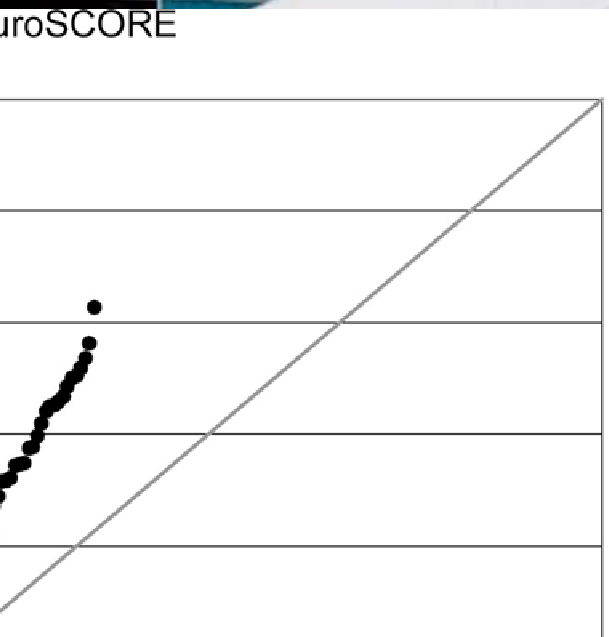


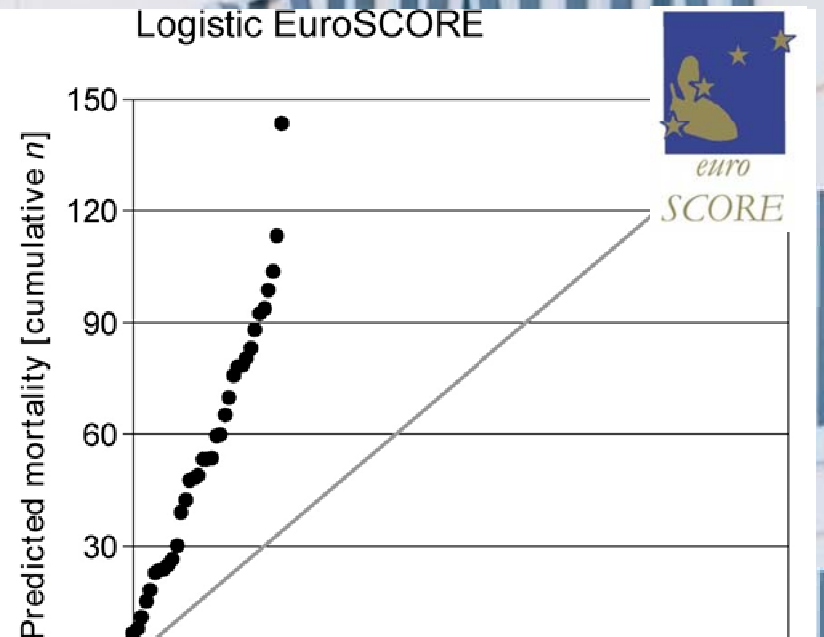
sperada por las escalas de riesgo

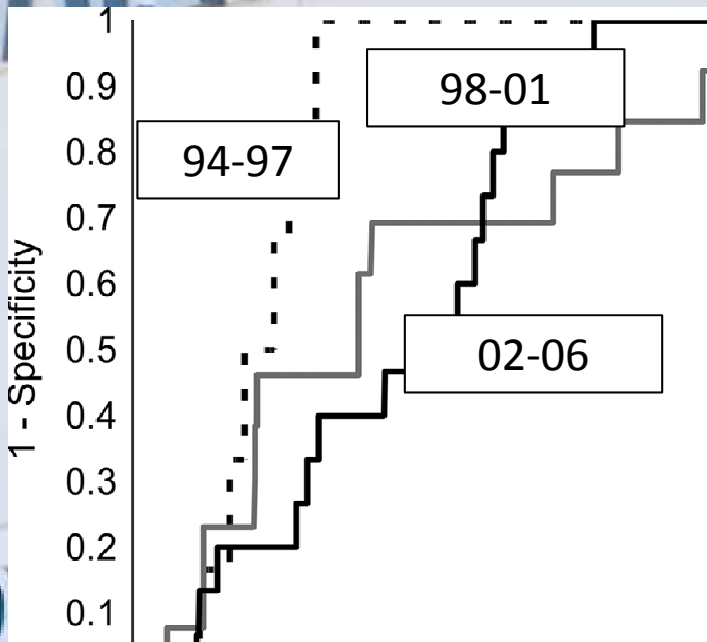


…sobretodo en pacientes de alto r

actualmente no están bien calibra

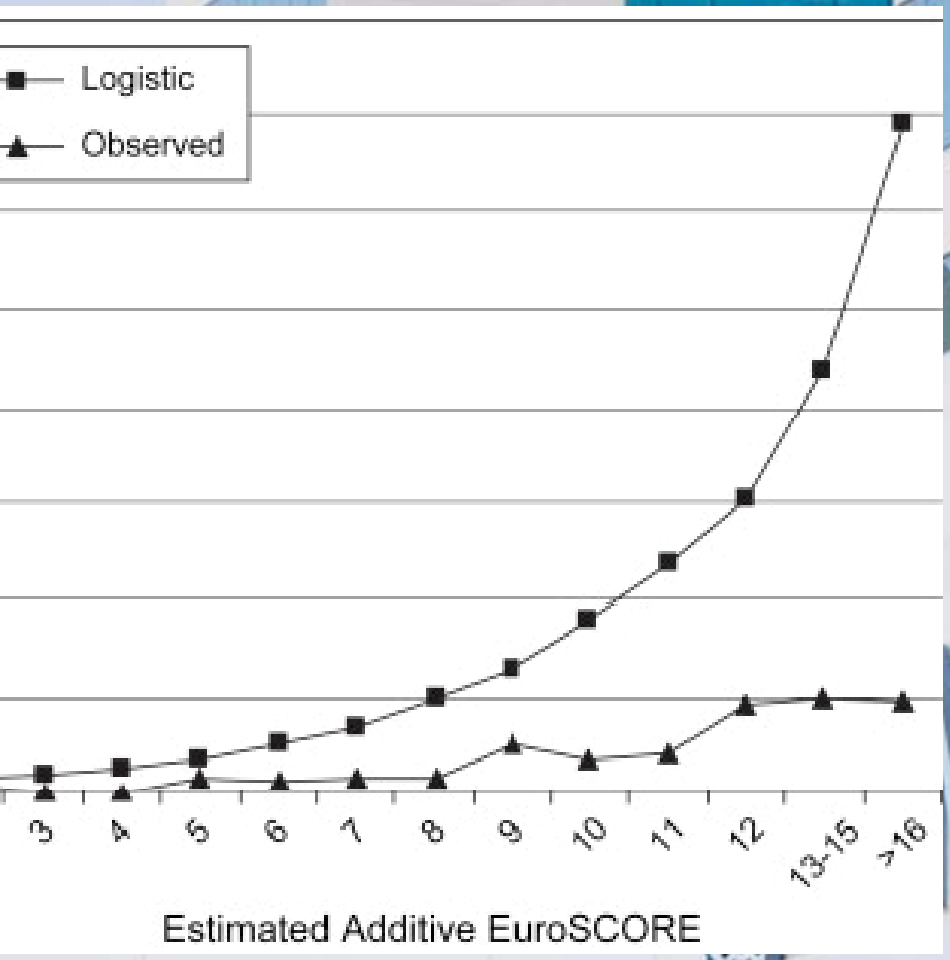


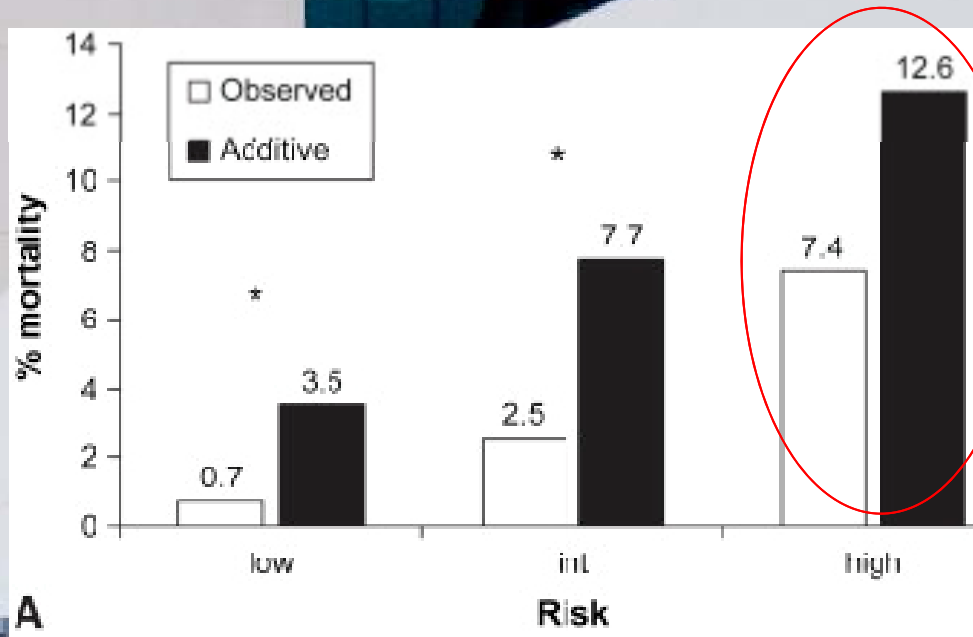


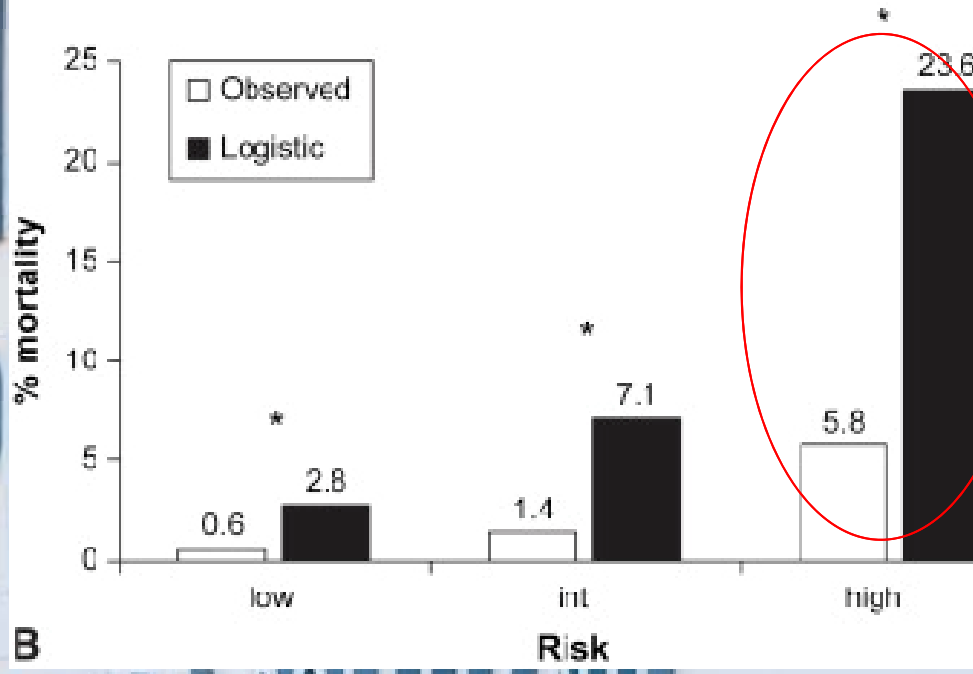


its considered for percutaneous aortic valve ment?

, MD,[a] Hartzell V. Schaff, MD,[a] Maurice E. Sarano, MD,[b] Zhuo Li, MS,[c] Thoralf M. Sundt, MD,[a] i, MD,[a] Charles J. Mullany, MBMS,[a] and Thomas A. Orszulak, MD[a]







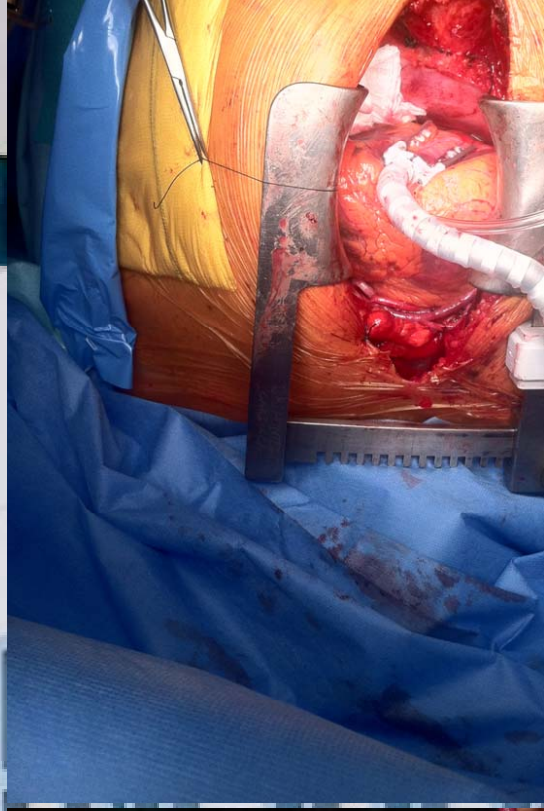
CAMBIOS DE PARADIGMA

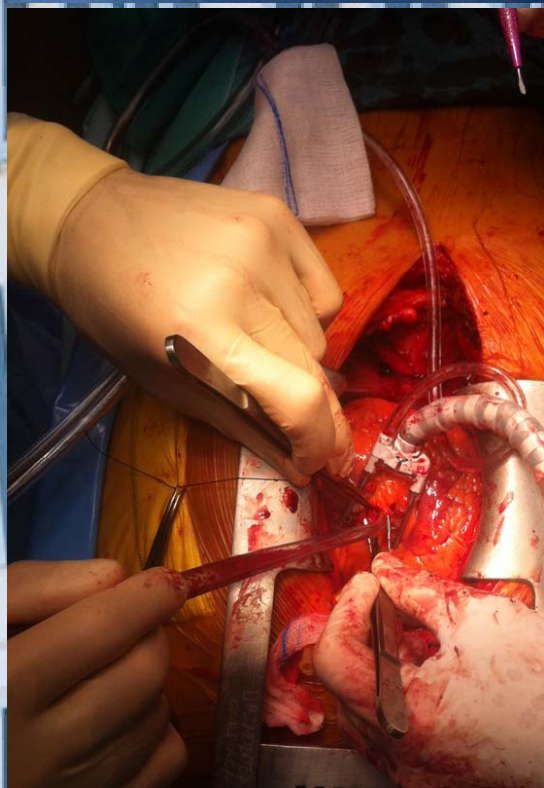
mbio en el perfil sociodemográfico de la población

olución de los resultados quirúrgicos y de las escalas de ri

pacto del desarrollo tecnológico

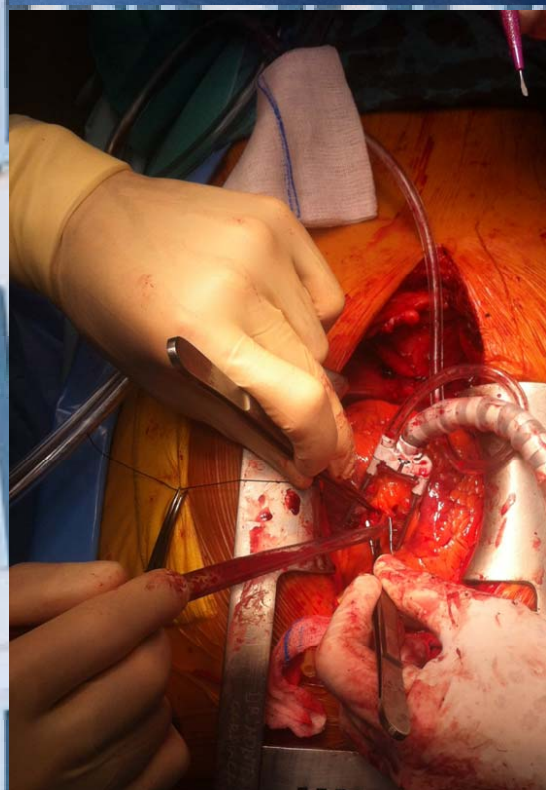

AT&T LTE
12:09 PM
88%
Messages
Calendar
Photos
Camera
Videos
Maps
Weather
Passbook
Notes
Reminders
Clock
Stocks
Newsstand
iTunes
App Store
Game Center
Settings
Pages
iPhoto
Utilities
Phone
Mail
Safari
Music





	+	-
CEC	Facilidad técnica Mayor tasa revascularización completa	Isquemia miocárdica Respuesta inflamatoria
CEC	Evita isquemia miocárdica Menor manipulación aórtica Ventaja en comorbilidades (renal, neurológica)	Mayor dificultad técnica Mayor tasa de revascularización

-Pump versus On-Pump Coronary-Artery Bypass Grafting in Elderly Patients



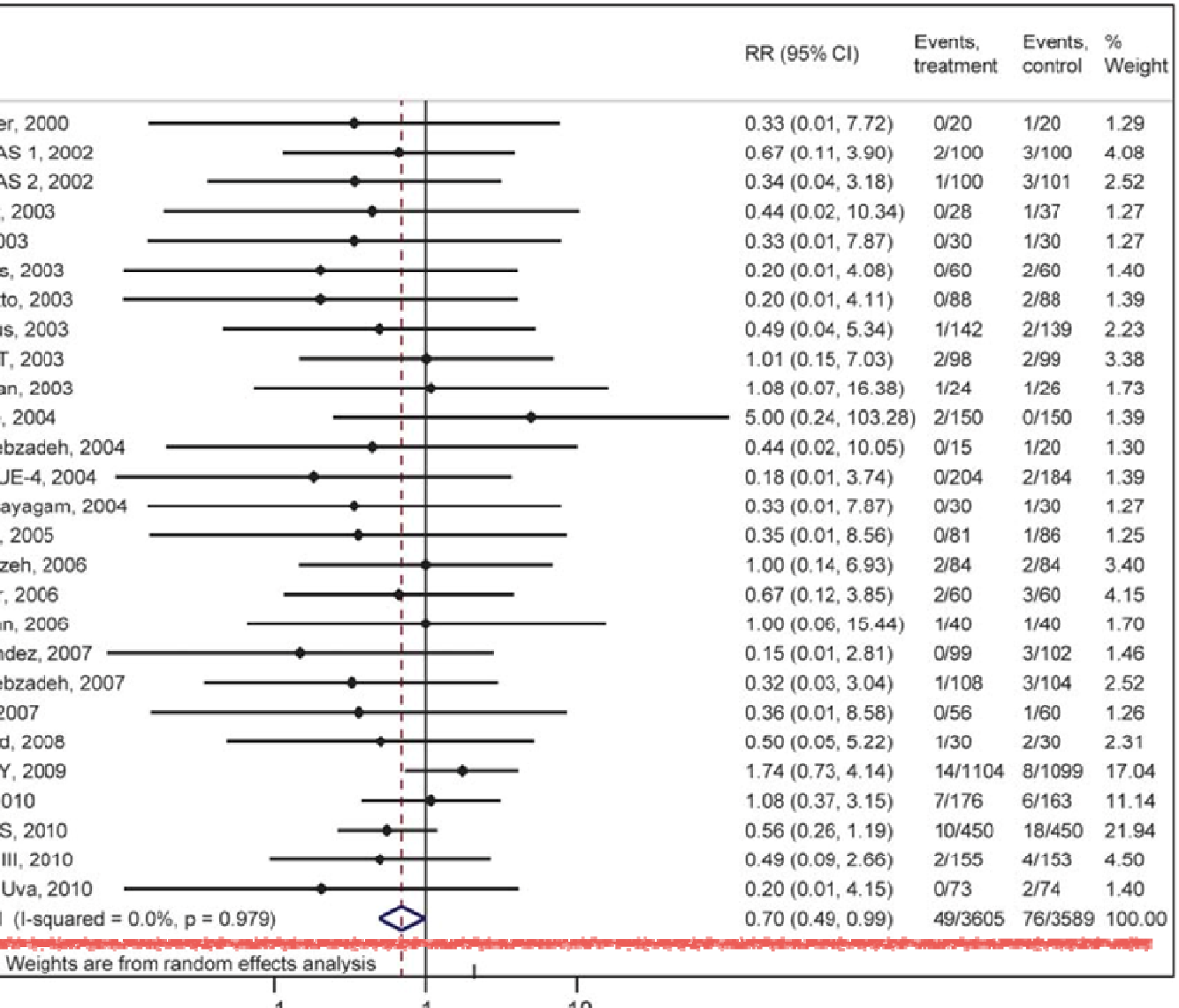
Trial End Points (Modified Intention-to-Treat Analysis).*

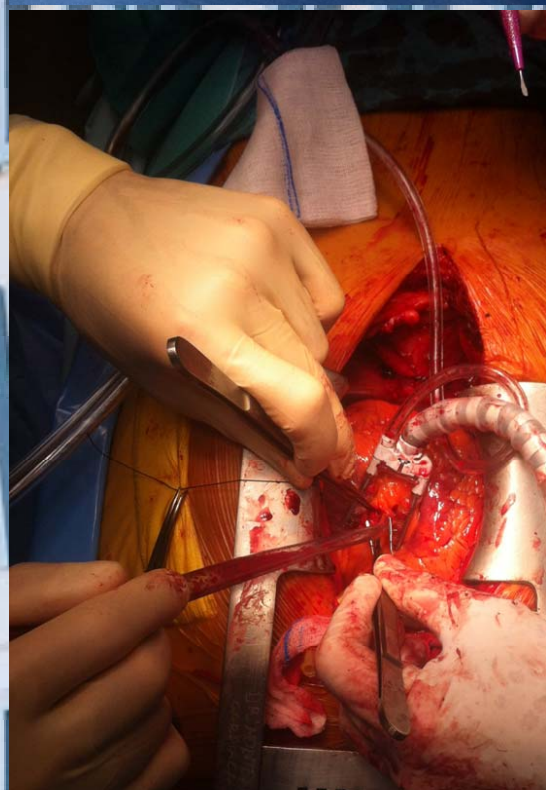
nt	Off-Pump CABG	On-Pump CABG	Odds Ratio or Hazard Ratio (95% CI)†	P Value
	no./total no. (%)			
ys‡				
composite end point§	93/1187 (7.8)	99/1207 (8.2)	0.95 (0.71–1.28)	0.74
al components				
th	31/1187 (2.6)	34/1207 (2.8)	0.92 (0.57–1.51)	0.75
cardial infarction	18/1187 (1.5)	20/1207 (1.7)	0.92 (0.51–1.66)	0.79
ke	26/1187 (2.2)	32/1207 (2.7)	0.83 (0.50–1.38)	0.47
eat revascularization	15/1187 (1.3)	5/1207 (0.4)	2.42 (1.03–5.72)	0.04
renal-replacement therapy	29/1187 (2.4)	37/1207 (3.1)	0.80 (0.49–1.29)	0.36
o¶				
composite end point§	154/1179 (13.1)	167/1191 (14.0)	0.93 (0.76–1.16)	0.48
al components				
th	83/1179 (7.0)	95/1191 (8.0)	0.88 (0.65–1.18)	0.38
cardial infarction	25/1179 (2.1)	28/1191 (2.4)	0.90 (0.53–1.54)	0.70
ke	41/1179 (3.5)	52/1191 (4.4)	0.79 (0.53–1.19)	0.26
eat revascularization	36/1179 (3.1)	24/1191 (2.0)	1.52 (0.90–2.54)	0.11
renal-replacement therapy	34/1179 (2.9)	42/1191 (3.5)	0.82 (0.52–1.28)	0.37

tes confidence interval.
tios are reported for end points at 30 days after surgery, and hazard ratios are reported for end points at 12 months
rgery.

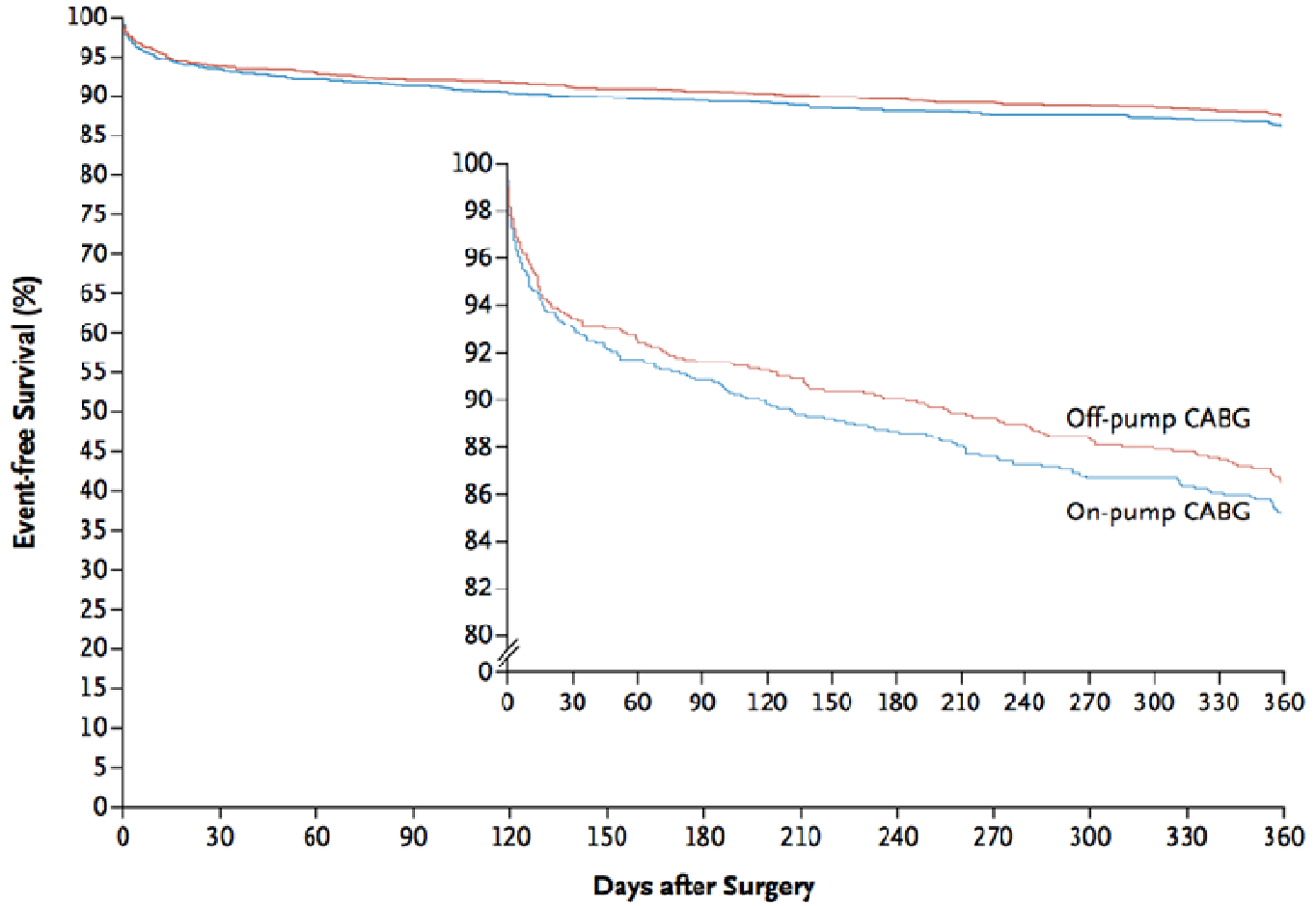
ump vs. on-pump coronary artery
ss surgery: an updated meta-analysis
meta-regression of randomized trials

Afilalo[1,2*], Mandana Rasti[1,2], Samuel M. Ohayon[1,2], Avi Shimony[1,2],
x J. Eisenberg[1,2]





-Pump versus On-Pump Coronary-Artery
Bypass Grafting in Elderly Patients

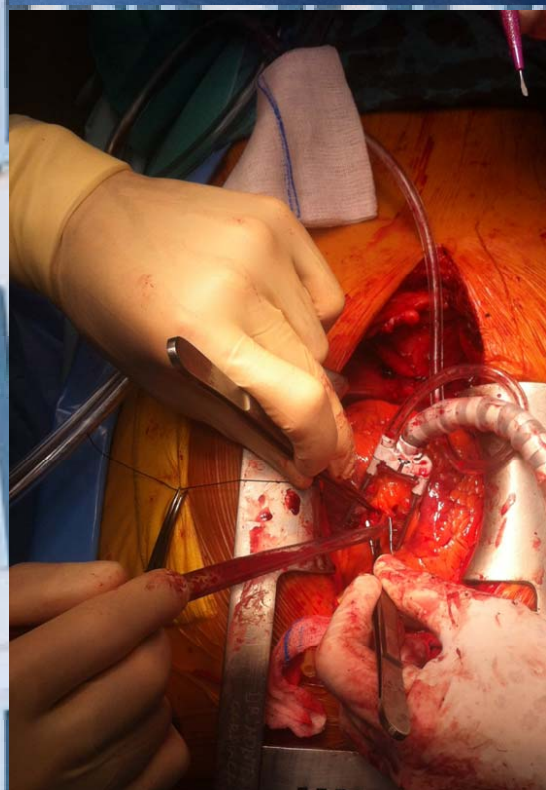


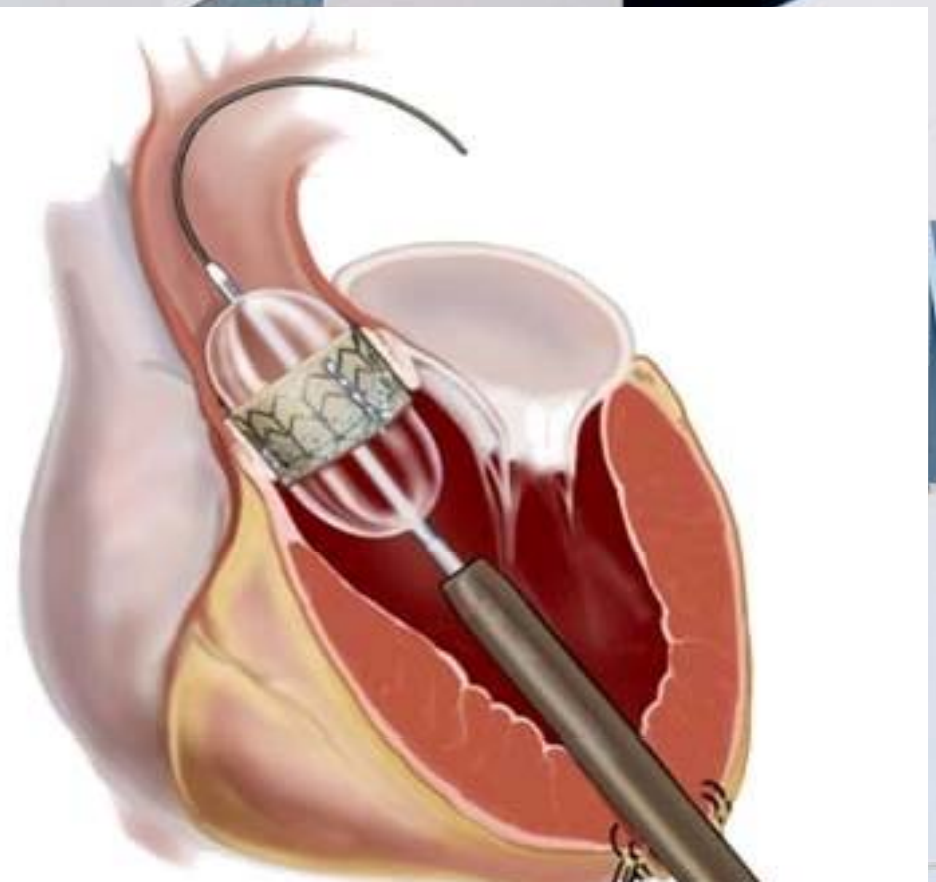
Risk

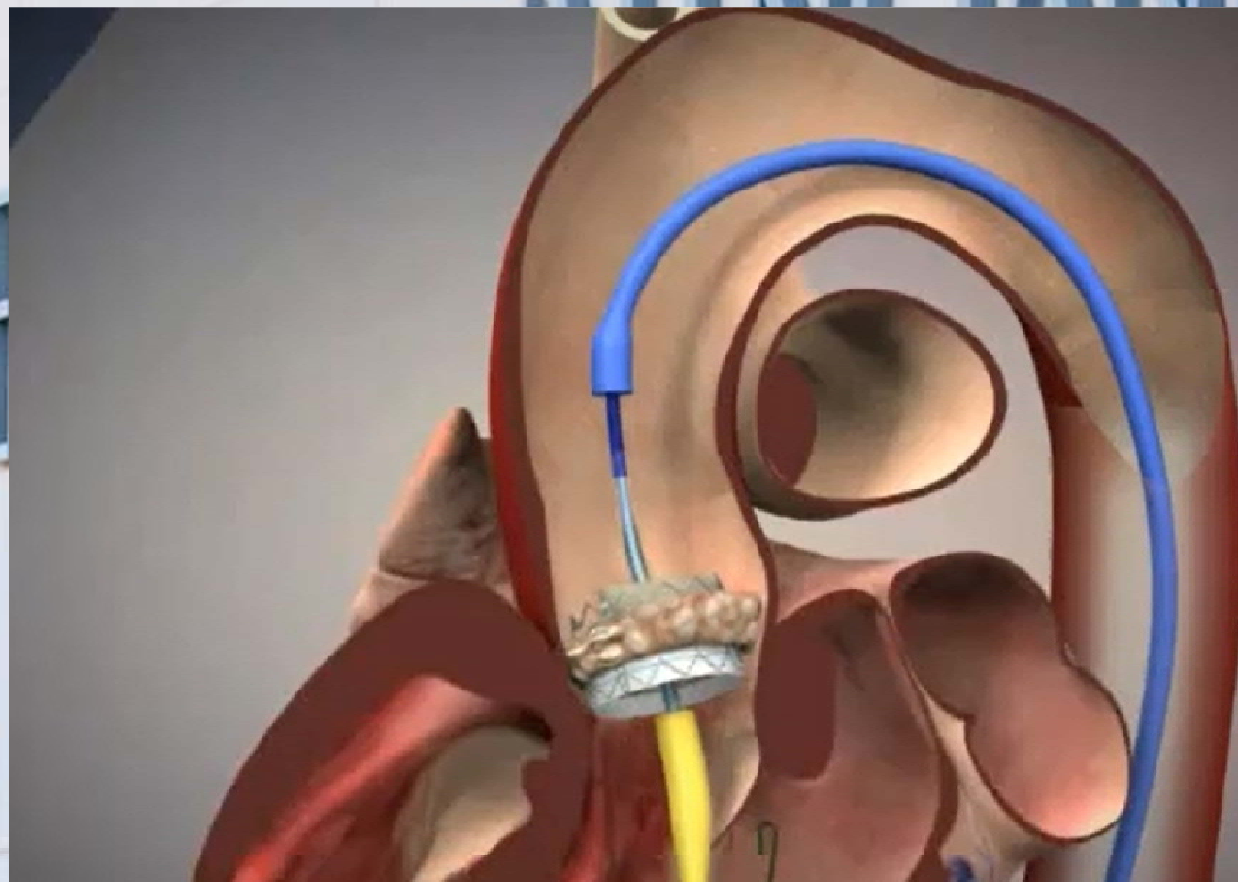
np CABG	1192	1112	1095	1083	1073	1065	1059	1053	1044	1039	1035	1030	1024
np CABG	1179	1103	1093	1079	1075	1066	1060	1053	1047	1041	1036	1032	1024

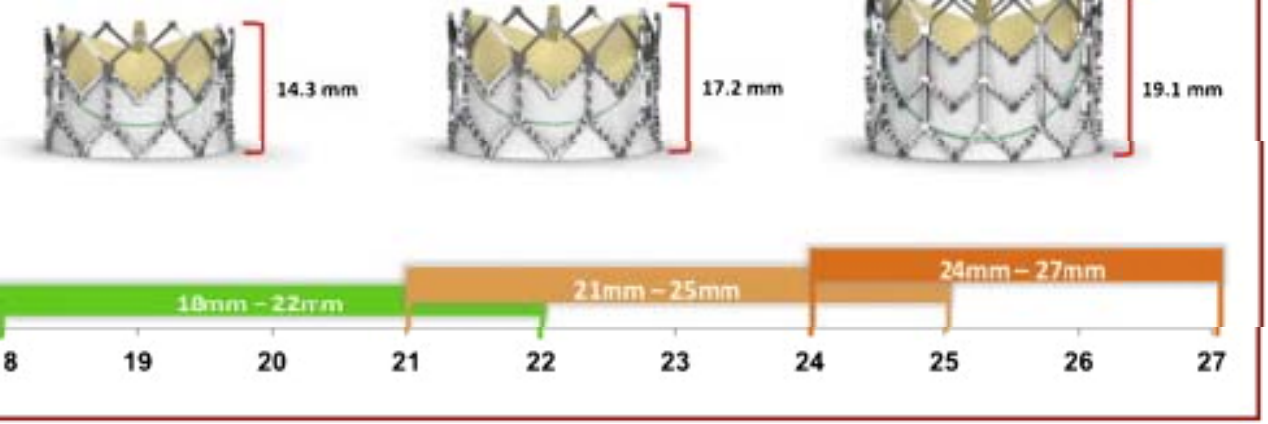
2. Kaplan–Meier Cumulative Event Rates for the Primary End Point at 12 Months.

mary end point was a composite of death, stroke, myocardial infarction, repeat revascularization, or new renal-

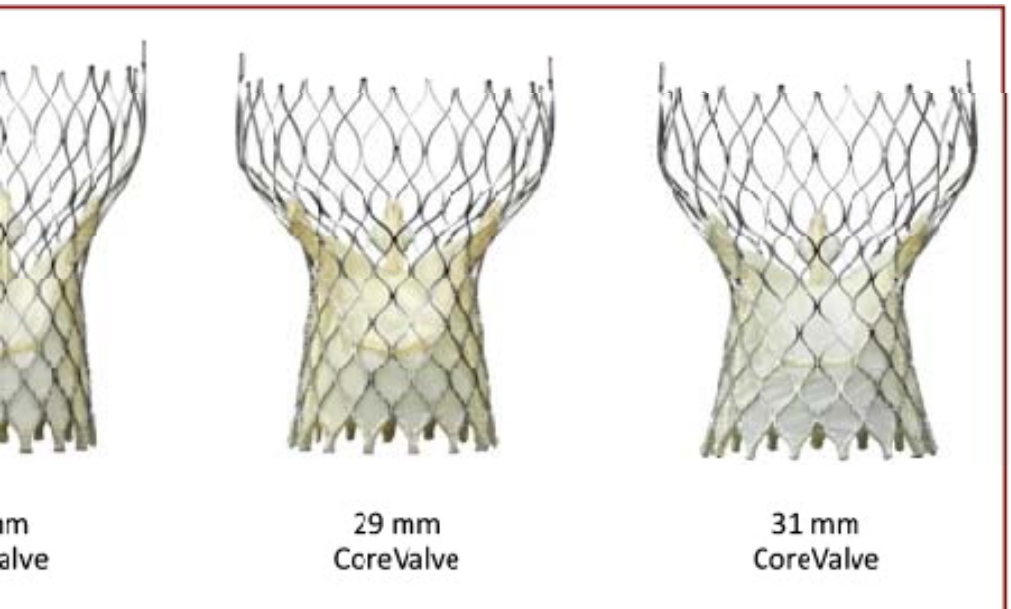


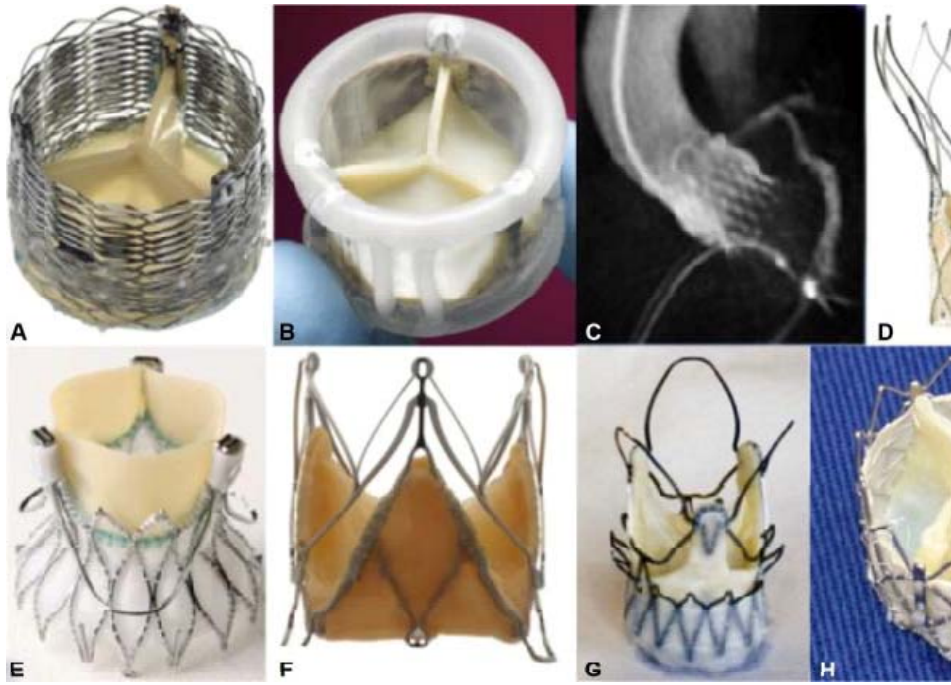






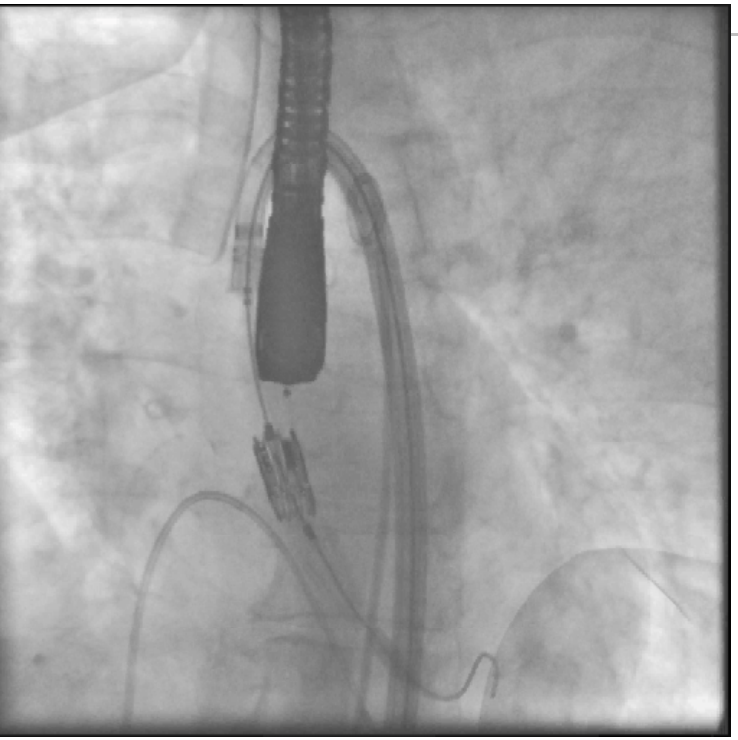
18 Fr profile

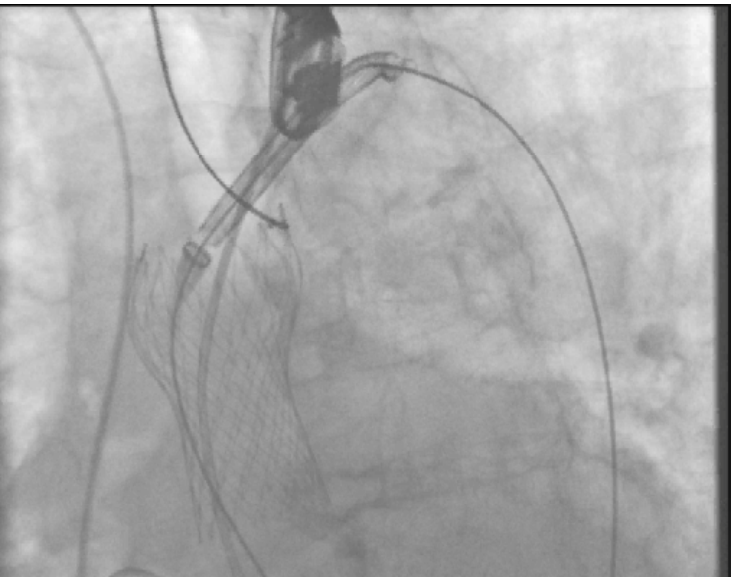




Outcomes After Transcatheter Aortic Valve Replacement Using Valve Academic Research Consortium Definitions: A ighted Meta-Analysis of 3,519 Patients From 16 Studies

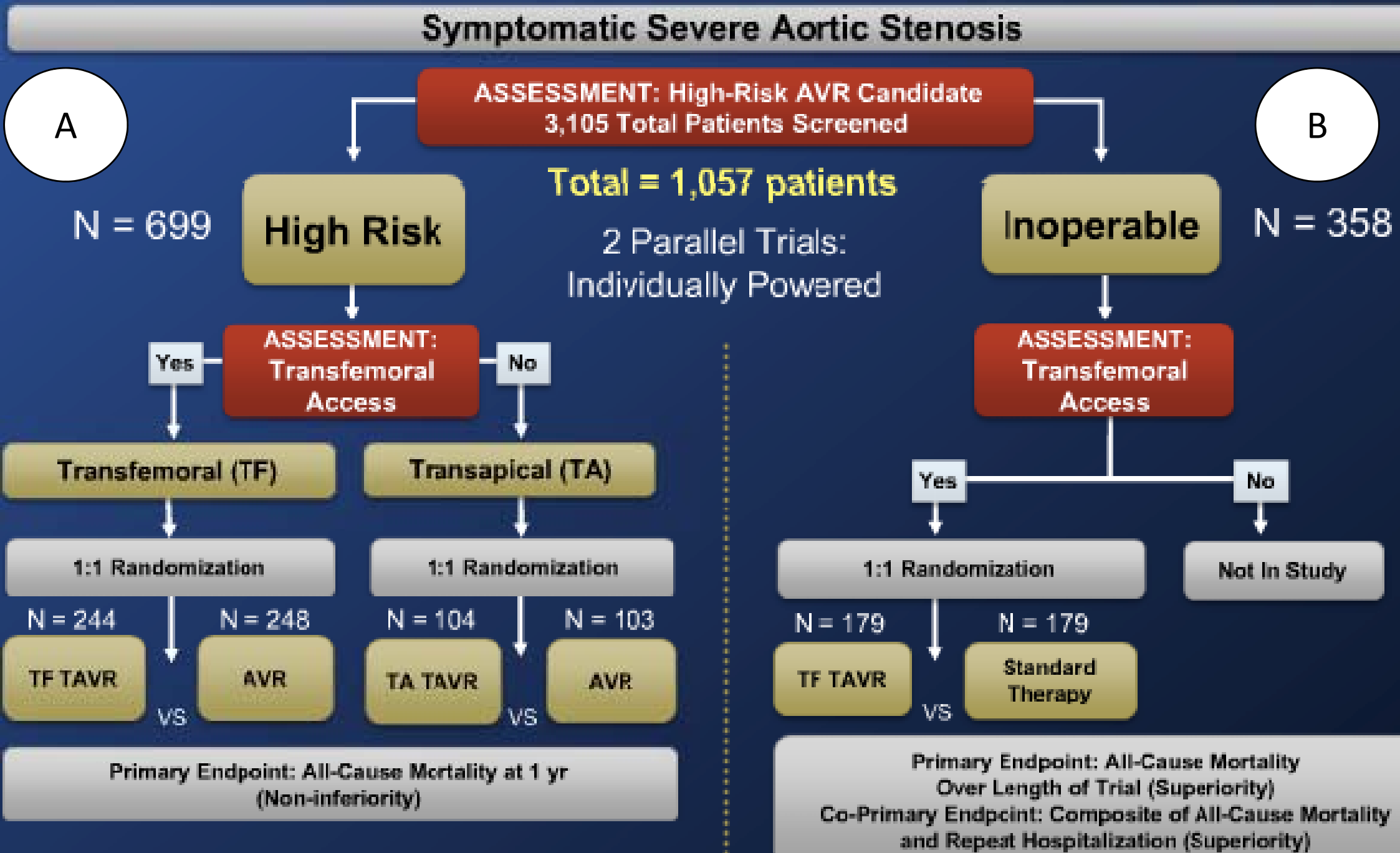
Cardiol. 2012;59(25):2317-2326. doi:10.1016/j.jacc.2012.02.022

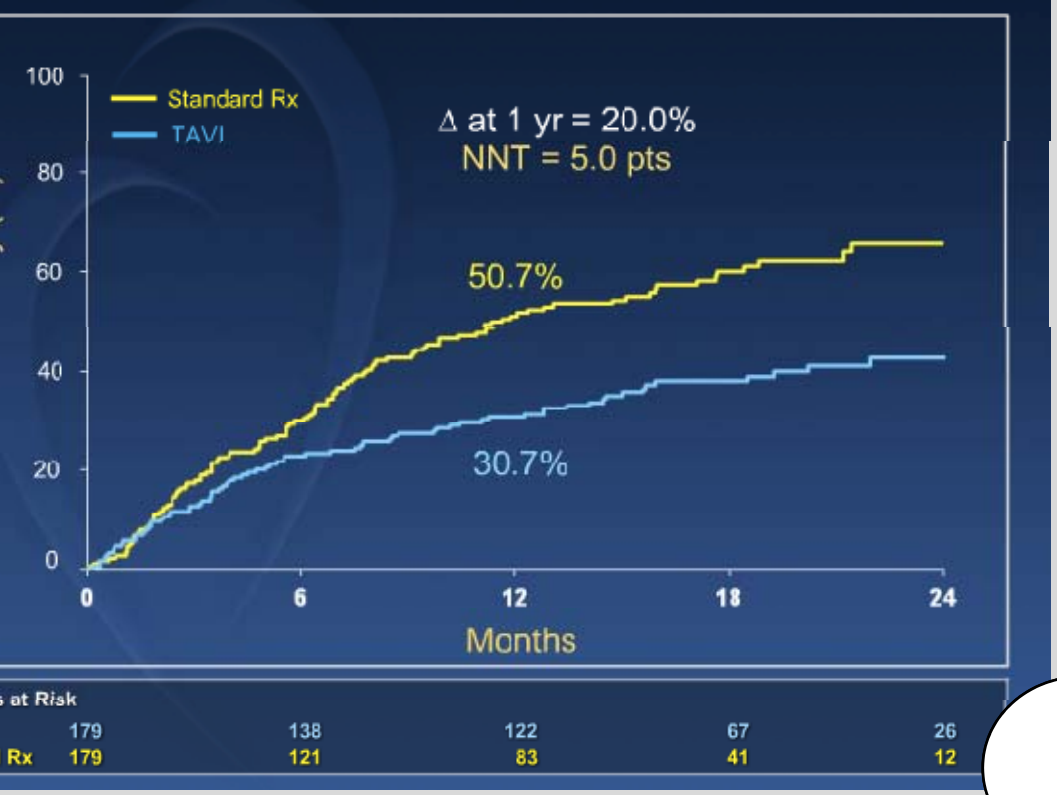


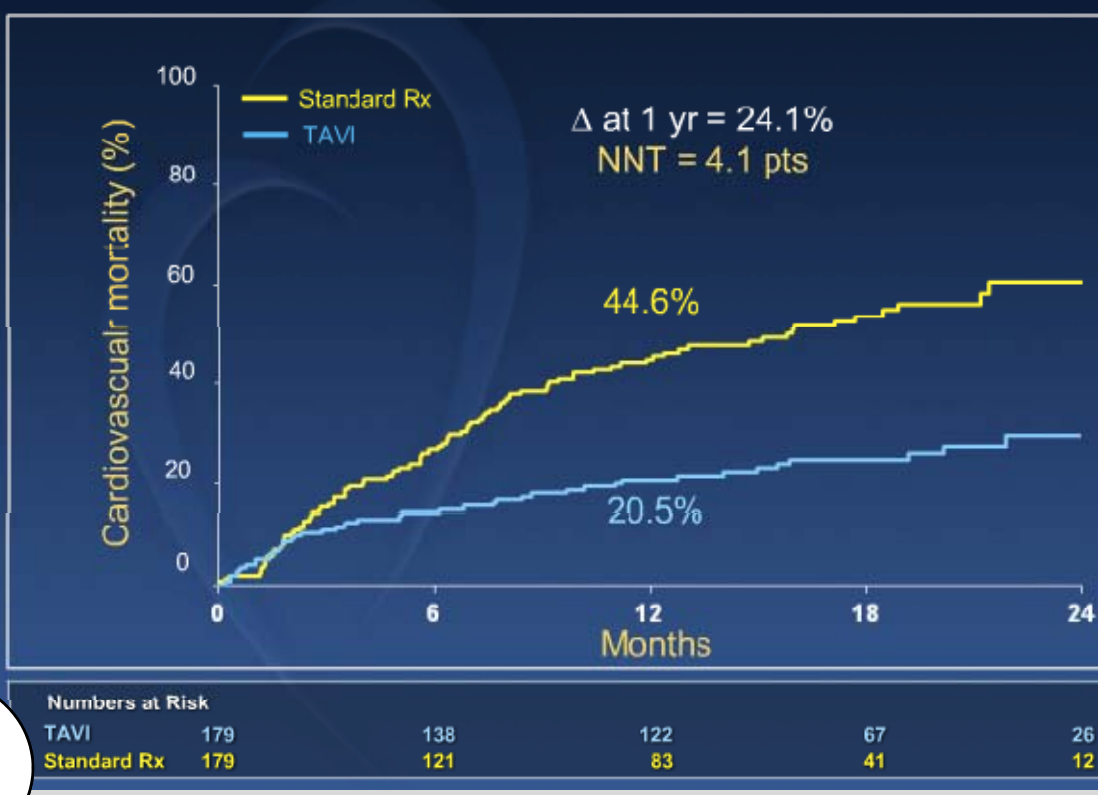


Outcomes	Reported Rat Min, Max,
Failure to deliver or implantation of the valve in the correct position	0.8, 5.6
Multiple valve implanted	0.6, 4.1
AVA ≤1.2 cm^2	0.0, 9.7
Mean gradient >20 mm Hg	0.0, 2.9
Moderate to severe AR	0.0, 30.0
Valve embolization	0.0, 5.6
Valve in valve	0.0, 9.0
Conversion to open surgery	0.0, 5.6
Repeat procedure for valve dysfunction	0.0, 4.1
Unplanned CPB	0.0, 1.9
Coronary obstruction	0.0, 3.0
LV perforation	0.2, 0.8
Tamponade	0.6, 4.6
Annulus rupture	0.3, 0.8
Aortic rupture	0.8, 1.0
Aortic dissection	0.9, 1.7
Endocarditis	0.3, 1.1
Valve thrombosis	0.0, 2.7

PARTNER Study Design

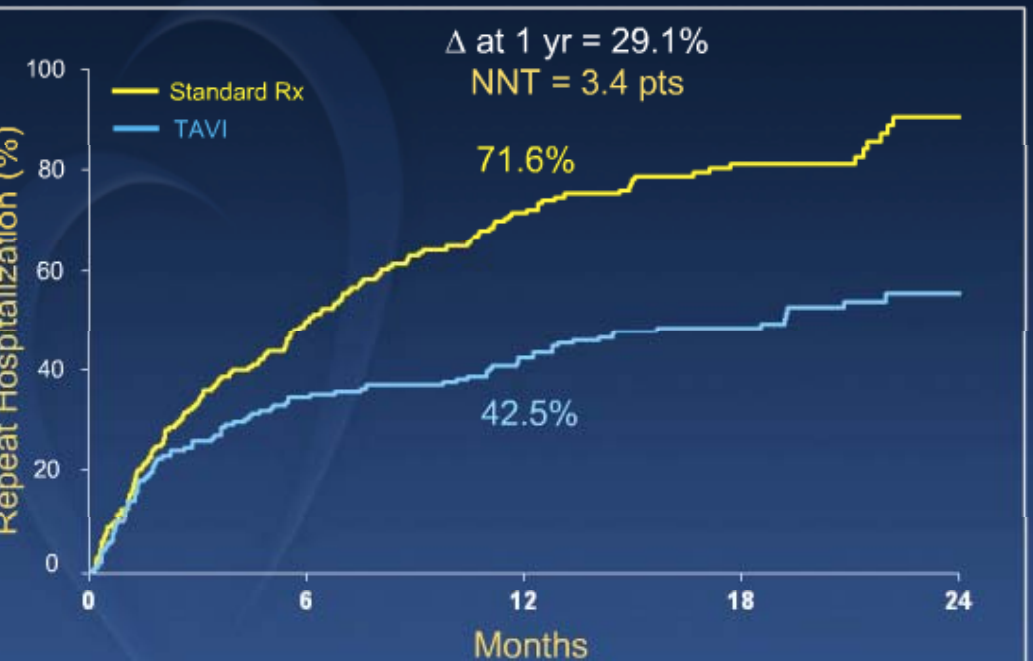




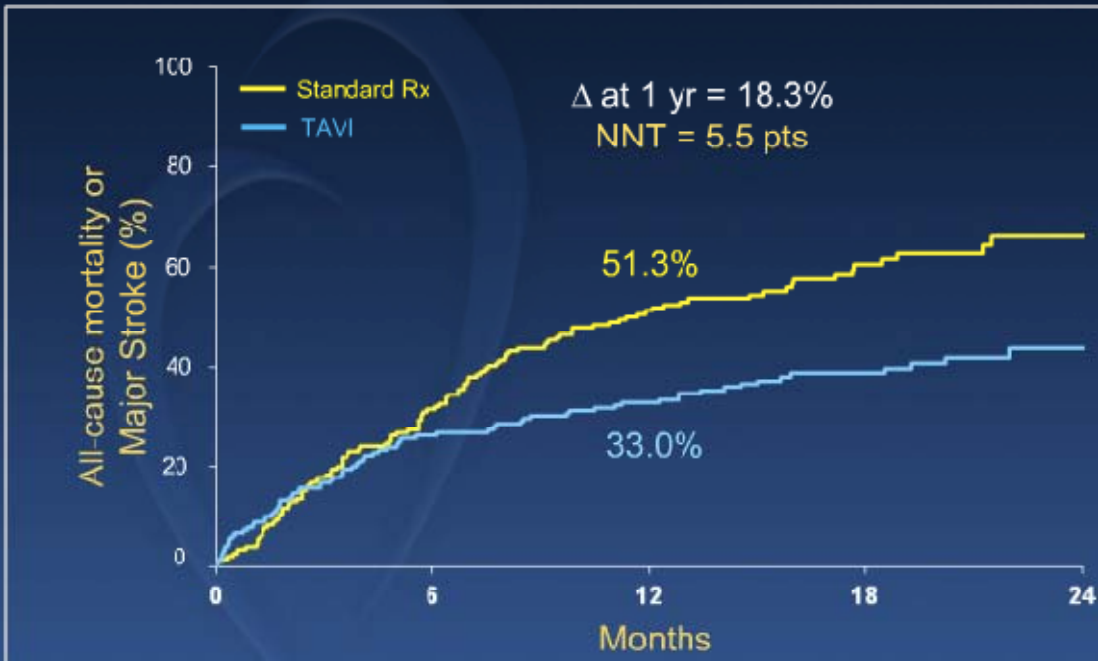


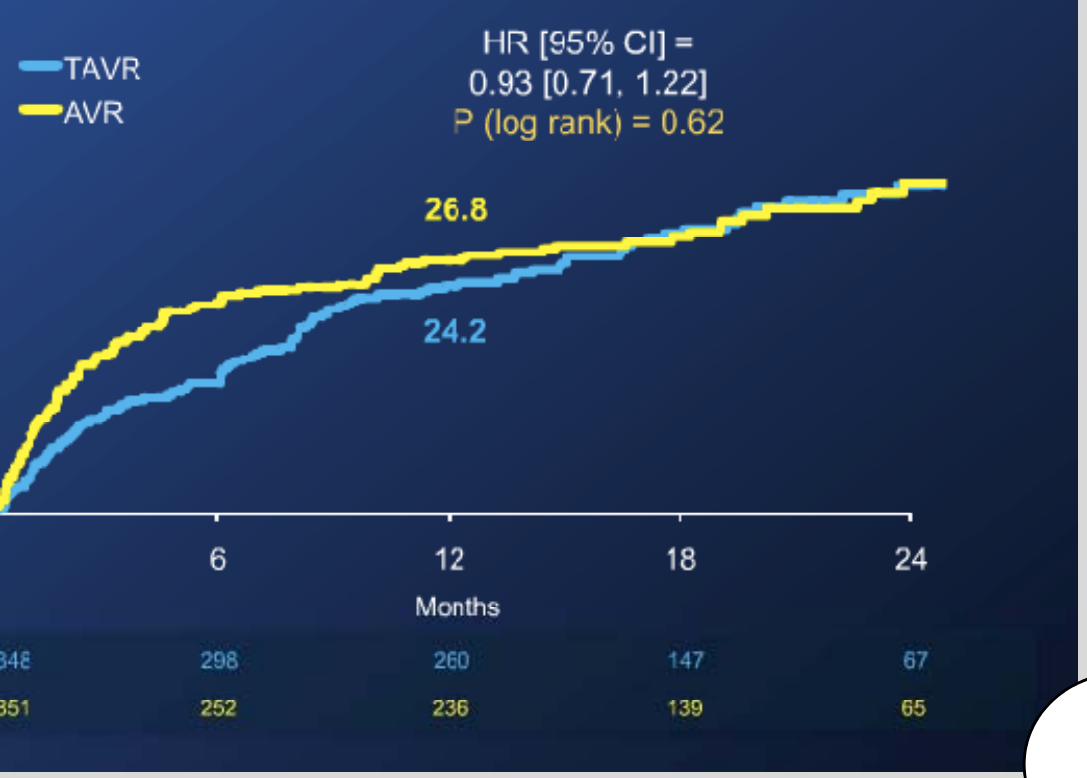
B

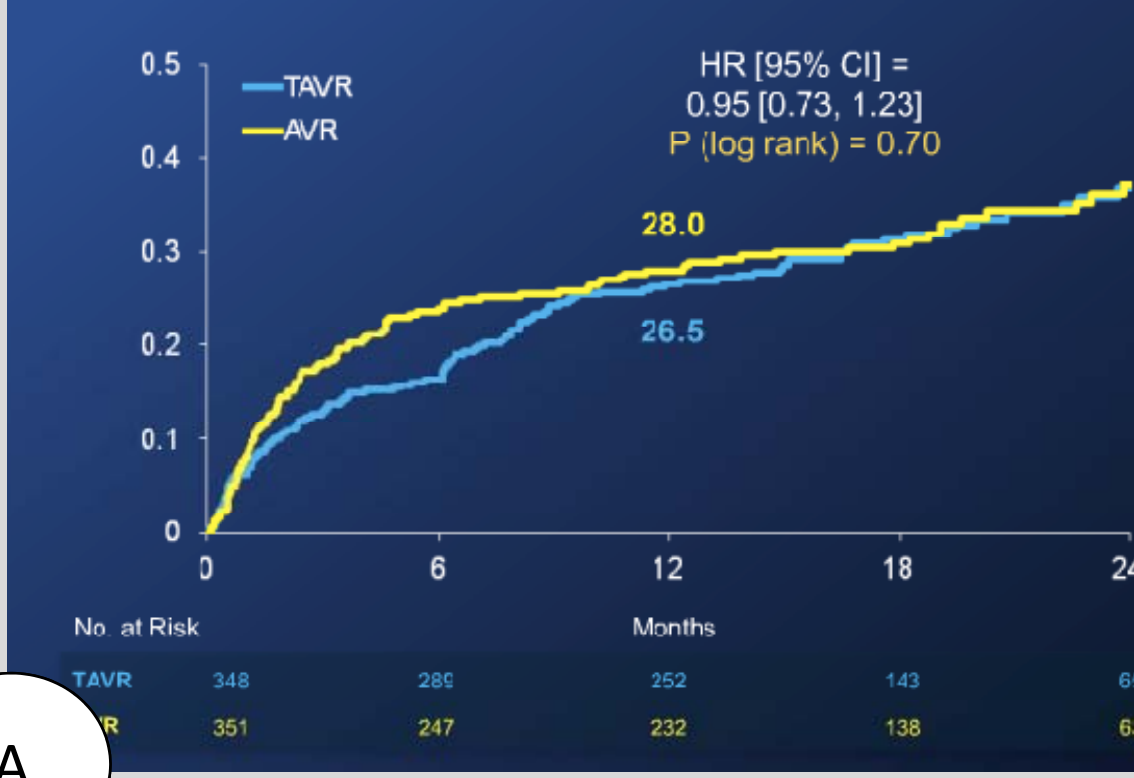
Mortality or Repeat Hosp



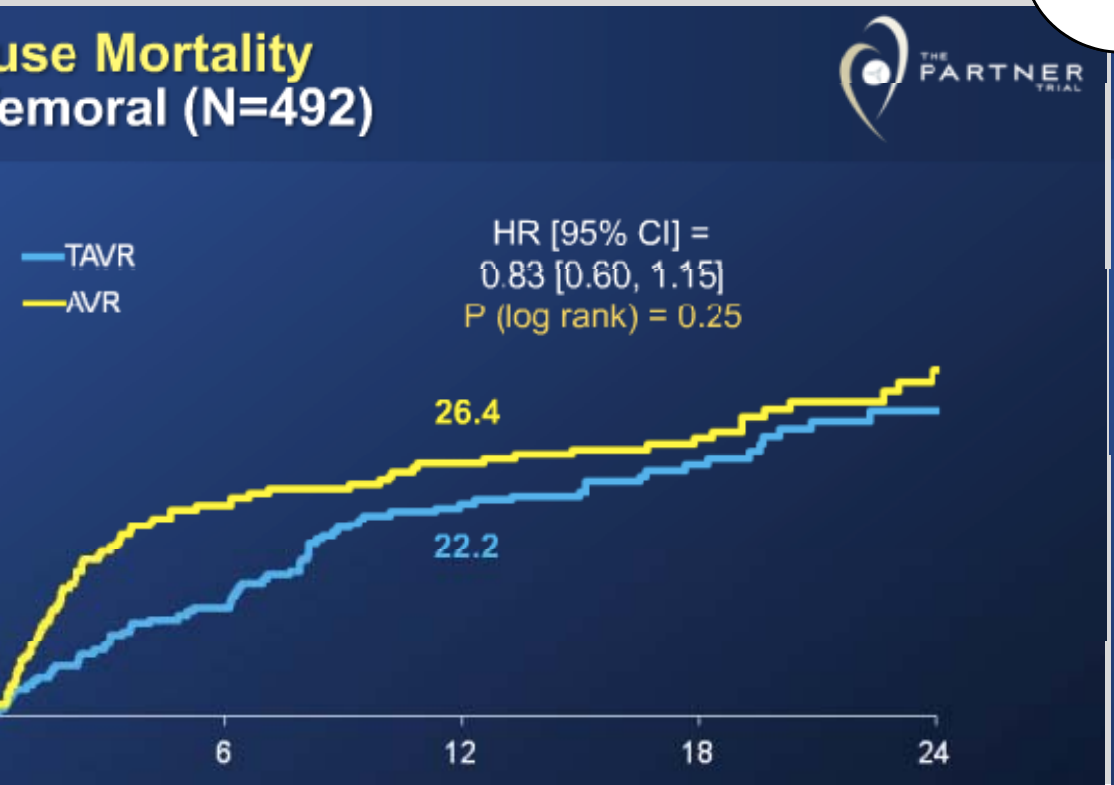
Mortality or Major Stroke

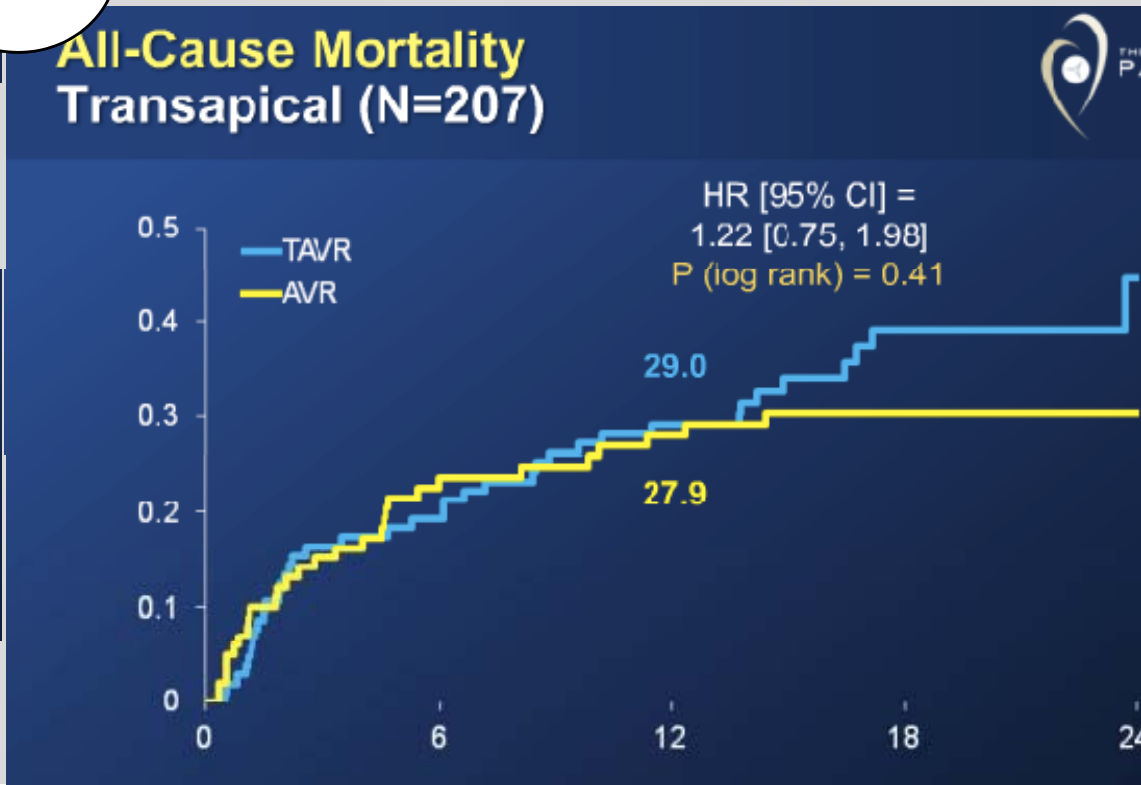



TAVR
AVR
HR [95% CI] =
0.93 [0.71, 1.22]
P (log rank) = 0.62
26.8
24.2
6
12
18
24
Months
348
298
260
147
67
351
252
236
139
65

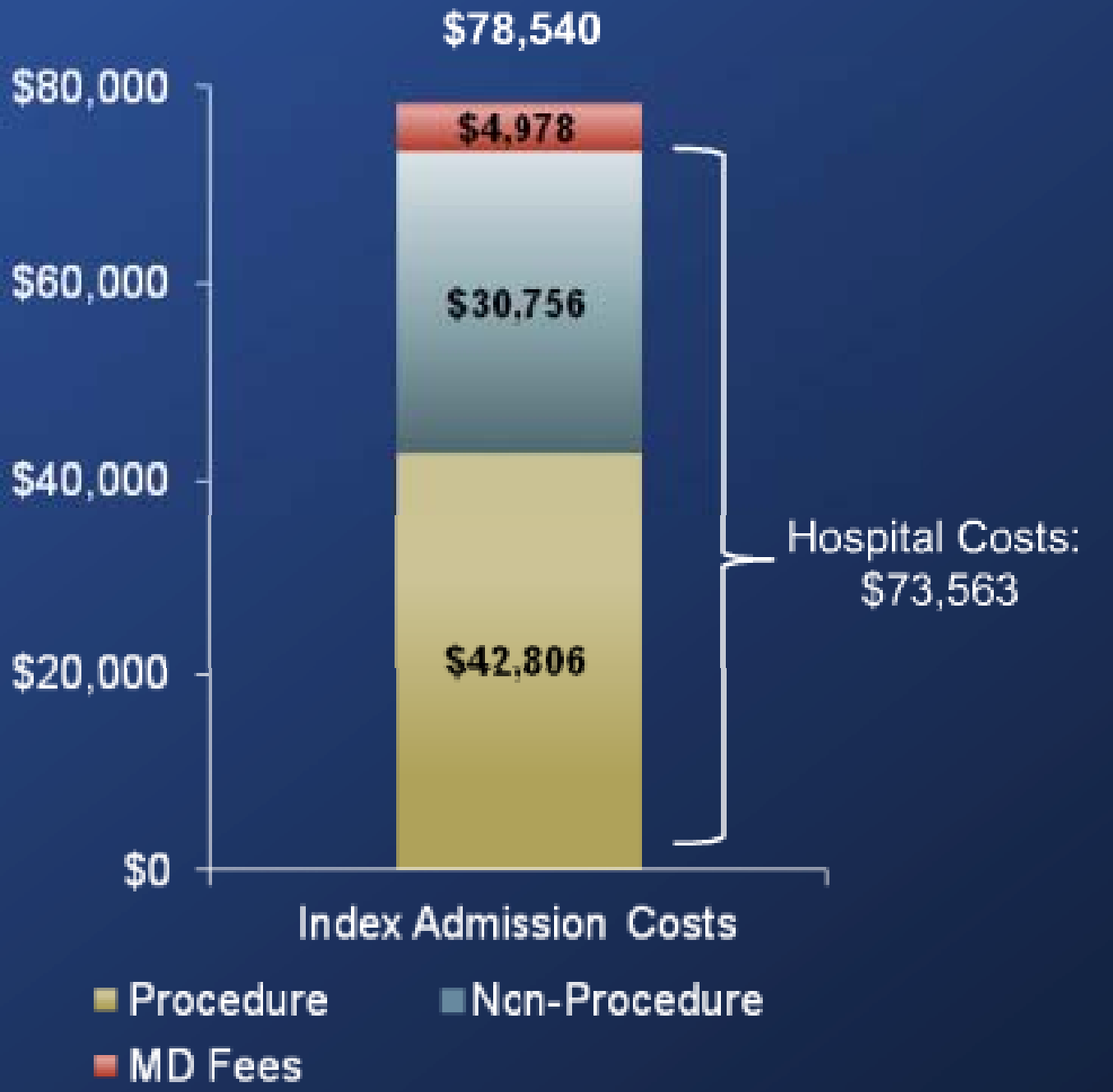

0.5
0.4
0.3
0.2
0.1
0
TAVR
AVR
HR [95% CI] =
0.95 [0.73, 1.23]
P (log rank) = 0.70
28.0
26.5
0
6
12
18
24
No. at Risk
Months
TAVR
348
289
252
143
351
247
232
138

A


use Mortality
emoral (N=492)
THE PARTNER TRIAL
TAVR
AVR
HR [95% CI] =
0.83 [0.60, 1.15]
P (log rank) = 0.25
26.4
22.2
6
12
18
24


All-Cause Mortality
Transapical (N=207)
0.5
0.4
0.3
0.2
0.1
0
TAVR
AVR
HR [95% CI] =
1.22 [0.75, 1.98]
P (log rank) = 0.41
29.0
27.9
0
6
12
18

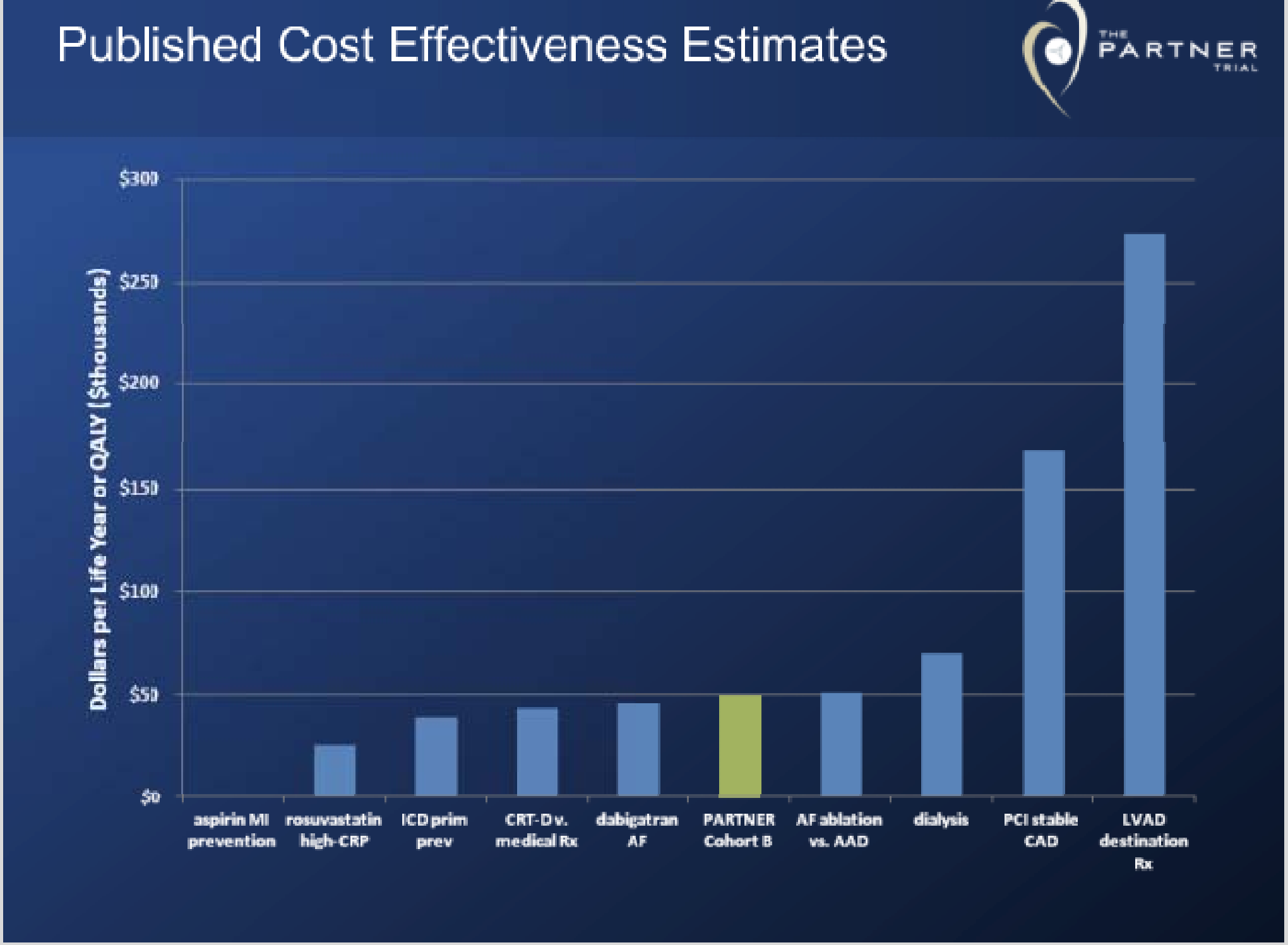
TAVR Admission Costs

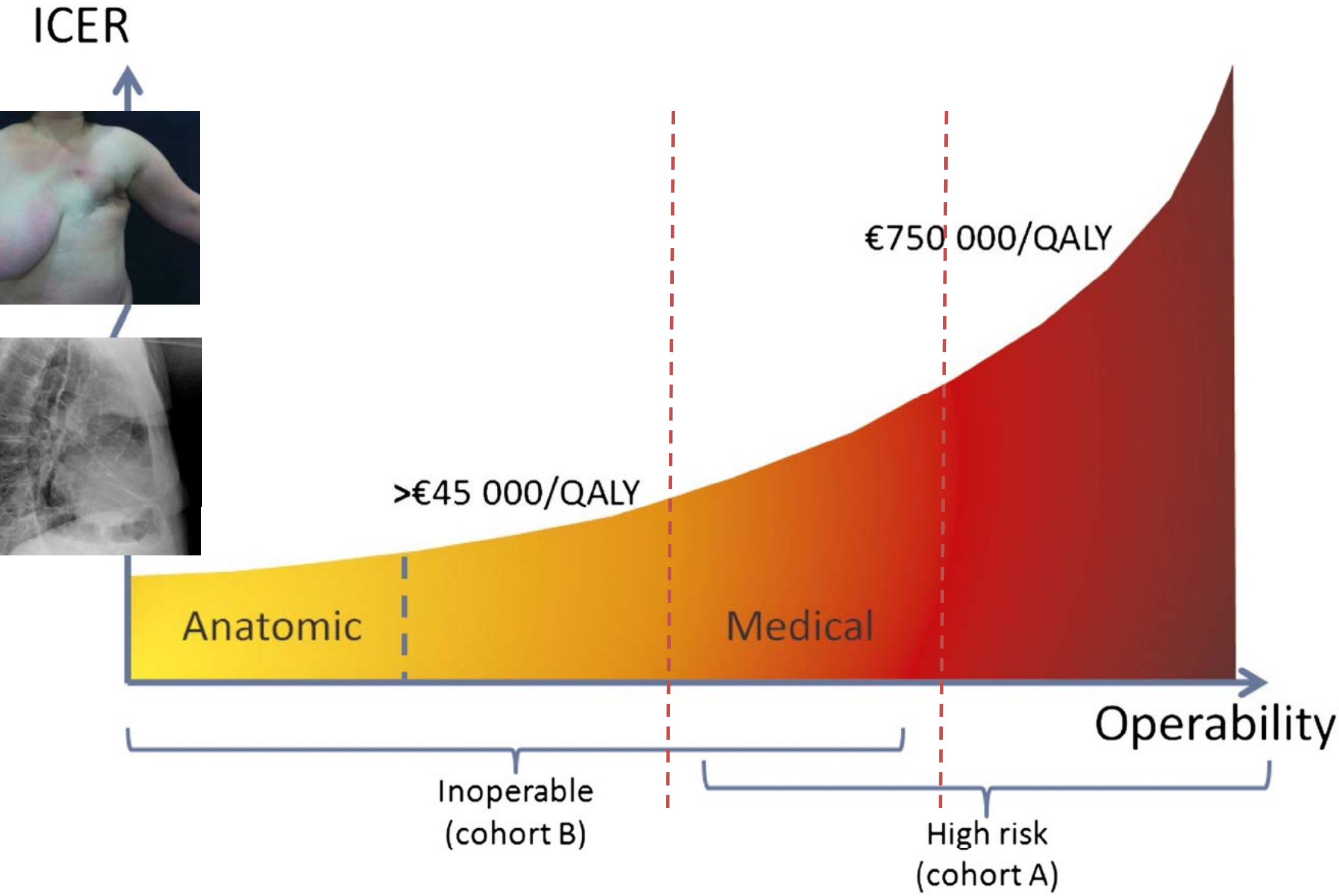


Mean (median) LOS (days)	
ICU	4.0 (2.0)
Non-ICU	6.1 (5.0)
Total	10.1 (7.0)
Post-Procedure	8.6 (6.0)

(N=175)

Published Cost Effectiveness Estimates





Neyt M et al. BMJ Open 2012;2:e001032

lvular heart disease severe?
s the patient have symptoms?
symptoms related to valvular disease?
t are patient life expectancy[a] and expected quality of life?
he expected benefits of intervention (vs. spontaneous outcome) eigh its risks?
t are the patient's wishes?
local resources optimal for planned intervention?

tancy should be estimated according to age, gender, comorbidities ar
ecific life expectancy.

RT FROM THE SOCIETY OF THORACIC SURGEONS

neter Valve Therapy: A Professional Overview from the American College ology Foundation and The Society cic Surgeons

ittee Members: David R. Holmes, Jr, MD, FACC, ACCF President

Guidelines on the management of valvular disease (version 2012)

1.1. Components of New Valve Technology

Introduction

Several issues emerge with the introduction of this technology.

1. How will this technology be regulated and whom?
2. Will the technology be available in all centers by physicians or only in selected regional centers the latter, how will those centers be selected?
3. How will training of physicians and centers accomplished? What will the training paradigms and what experience is necessary for credential to be deemed proficient? Will the training be same for cardiologists and surgeons?
4. Will clinical databases be linked to administrat databases facilitating long-term outcome asse ment, comparative effectiveness research, and co

odern Perspective

. Thourani, MD, Richard Myung, MD, Patrick Kilgo, MS, Karen Thompson, DO,
Puskas, MD, Omar M. Lattouf, MD, PhD, William A. Cooper, MD,
Vega, MD, Edward P. Chen, MD, and Robert A. Guyton, MD

earch Unit, Division of Cardiothoracic Surgery, and Department of Biostatistics, Rollins School of Public Health,
ersity School of Medicine, Atlanta, Georgia

4. Significant Preoperative Predictors of In-Hospital
al from Multivariable Survival Analysis

ctor	Odds Ratio (95% CI)	*p* Value
rative CVA	5.36 (1.83, 15.65)	0.002
c lung disease	4.51 (1.53, 13.28)	0.006
ailure	1.39 (1.15, 1.69)	<0.001

nfidence interval; CVA = cerebrovascular accident.

usions. **In the modern era, octogenarians have ble short- and long-term results after open AVR. risons of less invasive techniques for AVR should outcomes based in the modern era and decisions ng surgical intervention in patients requiring hould not be based on age alone.**

(Ann Thorac Surg 2008;86:1458–65)

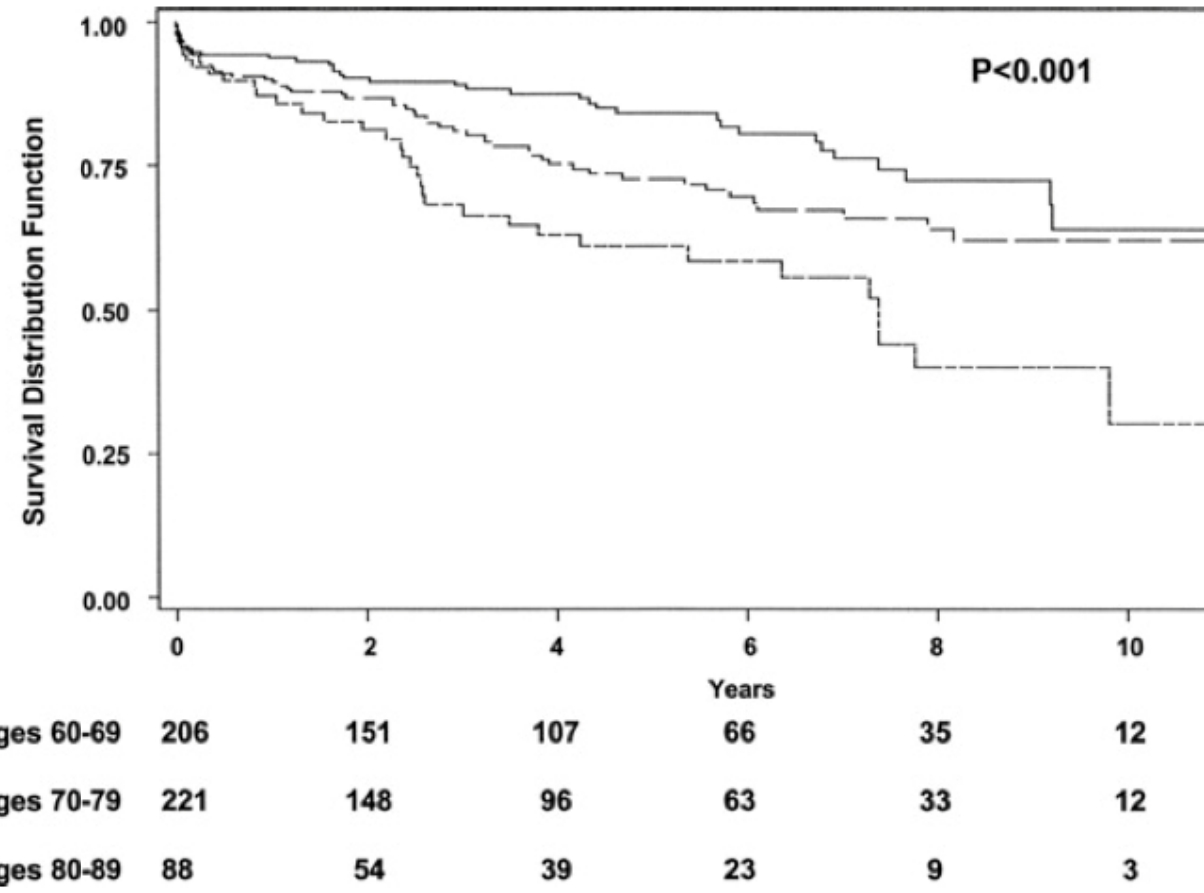
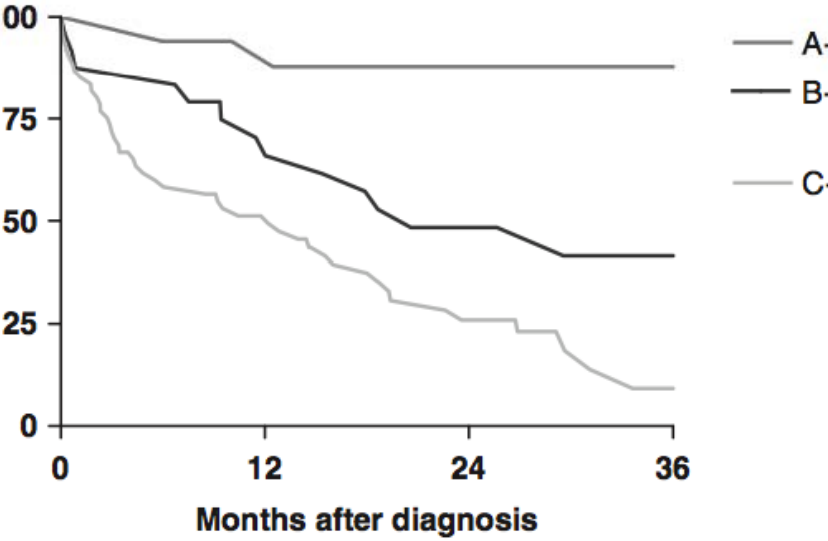


Fig 1. Kaplan-Meier curves for long-term survival among pat
age groups. (— = ages 60 to 69; – — = ages 70 to 79; — – –
ages 80 to 89.)

mes of elderly patients aged 80 and over with omatic, severe aortic stenosis: impact of patient's of refusing aortic valve replacement on survival

JOJO[1], N. GOHIL[1], D. BARKER[1], P. YOUSSEFI[1], T.V. SALUKHE[1], A. CHOONG[2], WING[3], J. BAYLISS[1], D.R. HACKETT[1] and M.A. KHAN[1]



mbers at risk

onths after diagnosis	0	6	12	18	24	30
roup A	17	17	16	15	14	13
roup B	24	22	17	14	10	7
roup C	62	36	28	20	12	5

ure 1. Survival curves of Groups A, B and C.

Variable	Hazard ratio (95% CI)	*P*-v
Groups A, B and C ($n=103$)		
Univariate analysis		
Age	1.11 (1.05–1.17)	<0
PA pressure	1.03 (1.01–1.05)	0
Inpatient status	2.52 (1.54–4.12)	<0
Loss of ability to self-care	2.51 (1.48–4.26)	0
EuroSCORE	1.04 (1.02–1.06)	0
Use of ACE-inhibitors	0.42 (0.21–0.83)	0
Aortic valve replacement	0.12 (0.03–0.35)	<0
Multivariate analysis		
Aortic valve replacement	0.15 (0.05–0.49)	0
Inpatient Status	2.37 (1.44–3.92)	0
Loss of ability to self-care	2.03 (1.19–3.48)	0
Groups A and B ($n=41$)		
Univariate analysis		
Age	1.15 (1.02–1.30)	0
Refusal to undergo AVR	12.61 (2.74–57.99)	0
Use of ACE-inhibitors	0.24 (0.07–0.82)	0
Use of statins	0.28 (0.10–0.80)	0
Multivariate analysis		
Refusal to undergo AVR	12.61 (2.74–57.99)	0

Conclusions: For elderly AS patients fit for su
the patient's decision to refuse AVR is asso
with a >12-fold increase in mortality risk.
findings have significant implications for inf

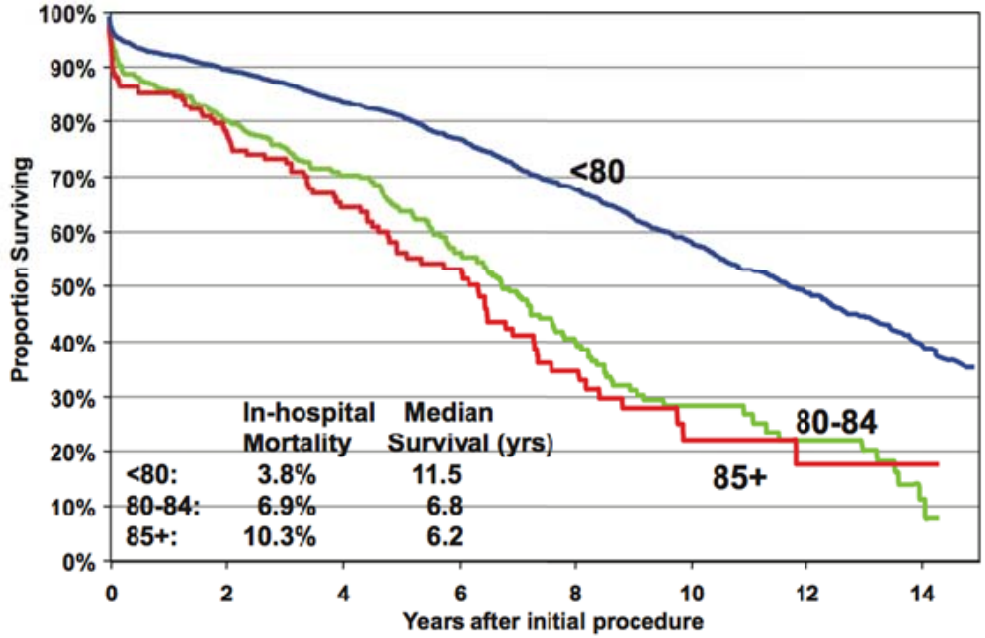


Figure 1. Adjusted survivorship by age among patients undergoing AVR. Adjusted for sex, ejection fraction, acuity, left end diastolic pressure.

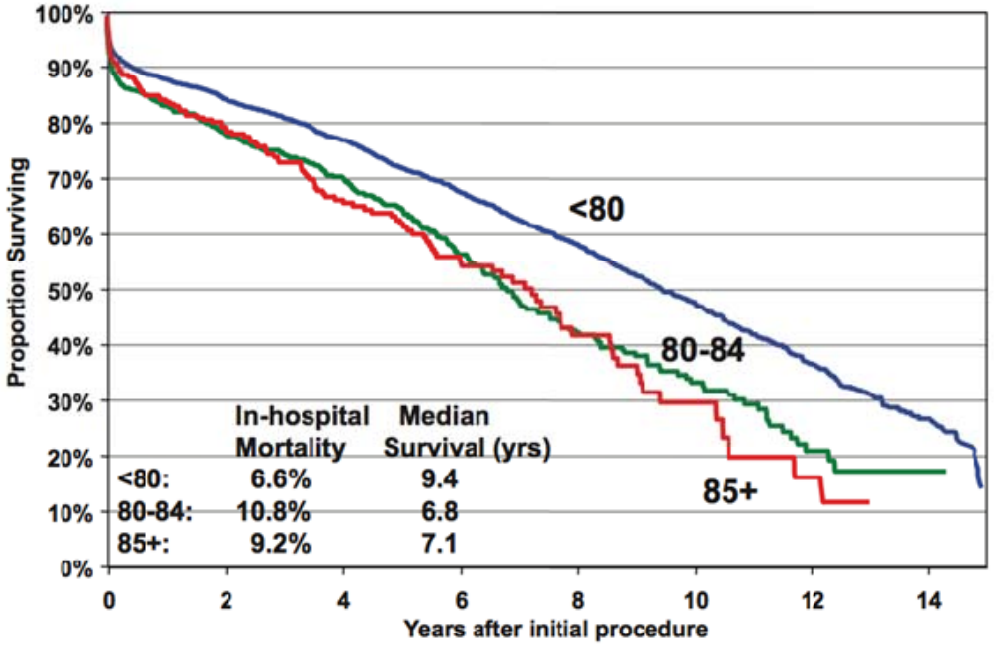
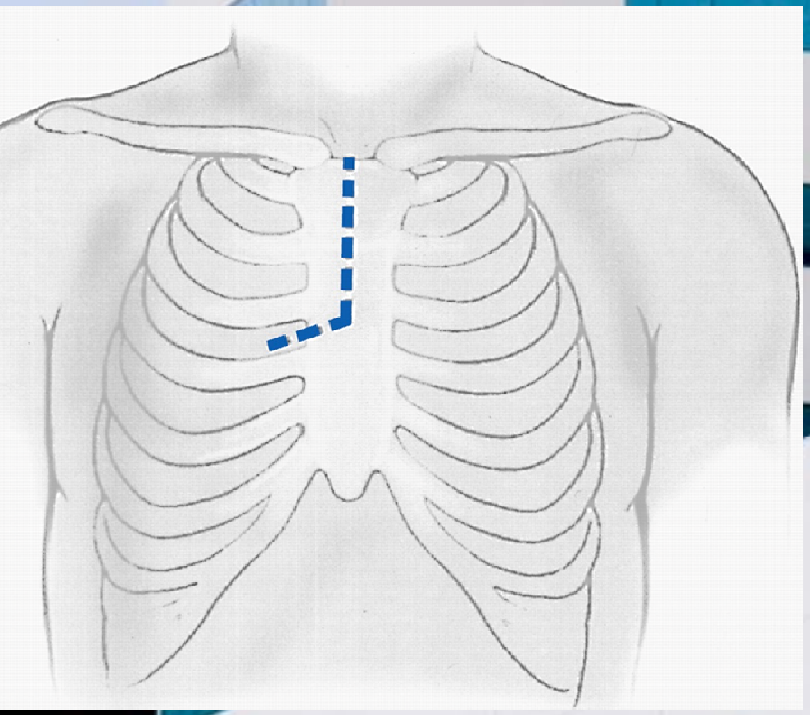
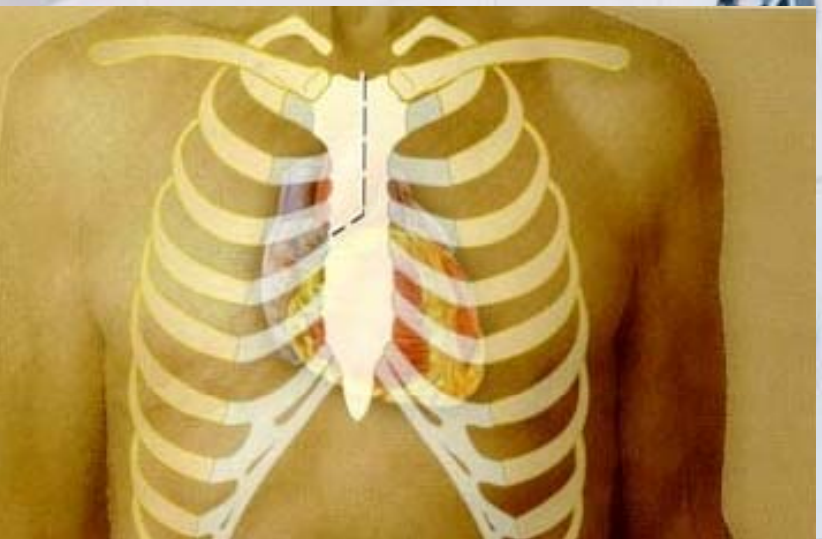
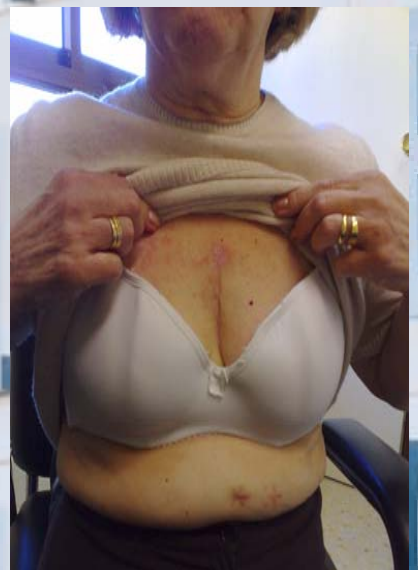


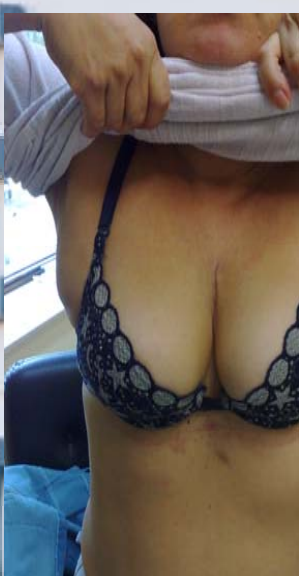
Figure 2. Adjusted survivorship by age among patients undergoing AVR+CABG. Adjusted for sex, ejection fraction, acuity, left end diastolic pressure.

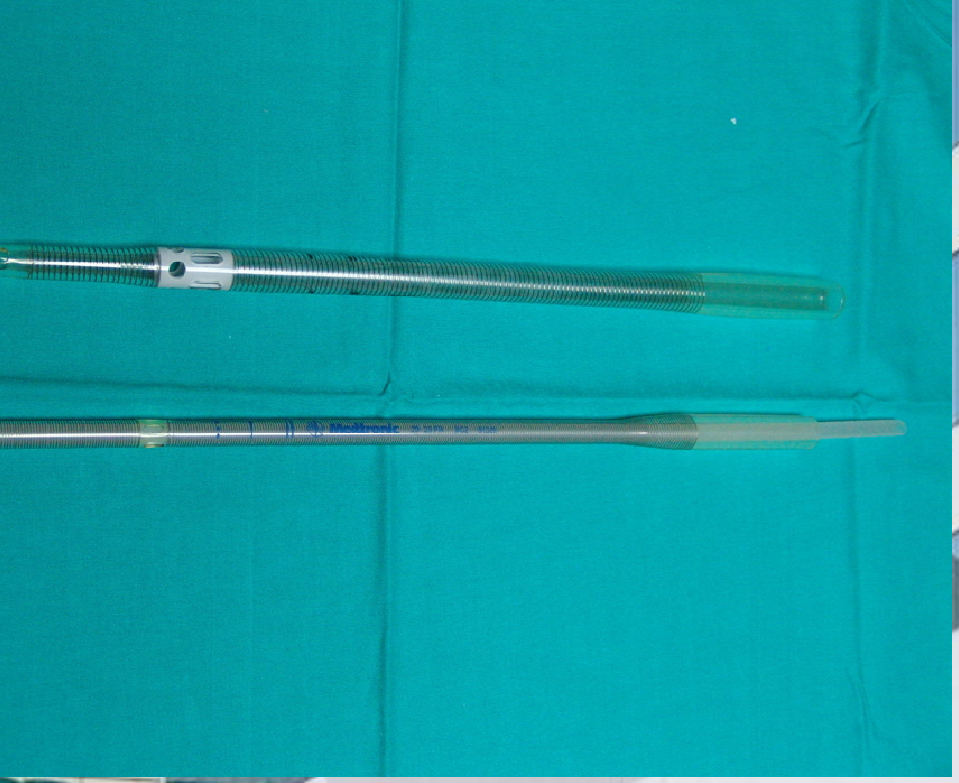
Conclusions—Survivorship among octogenarians is favorable, with more than half the patients surviving more than 6 years

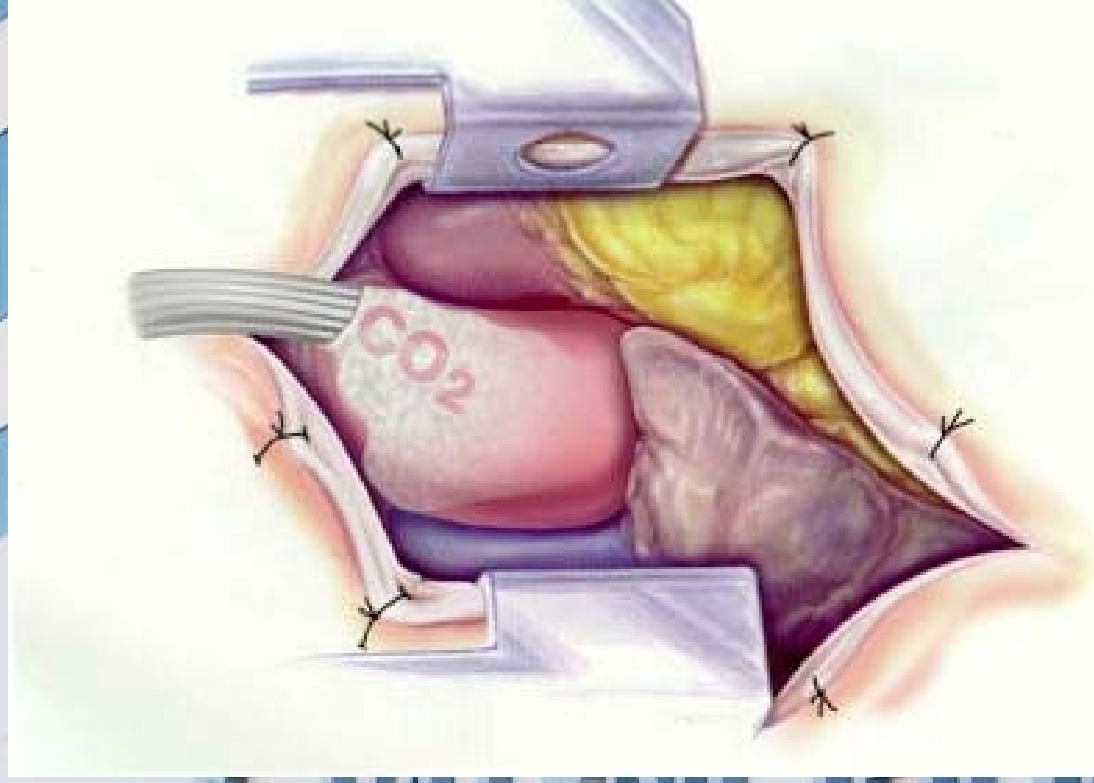








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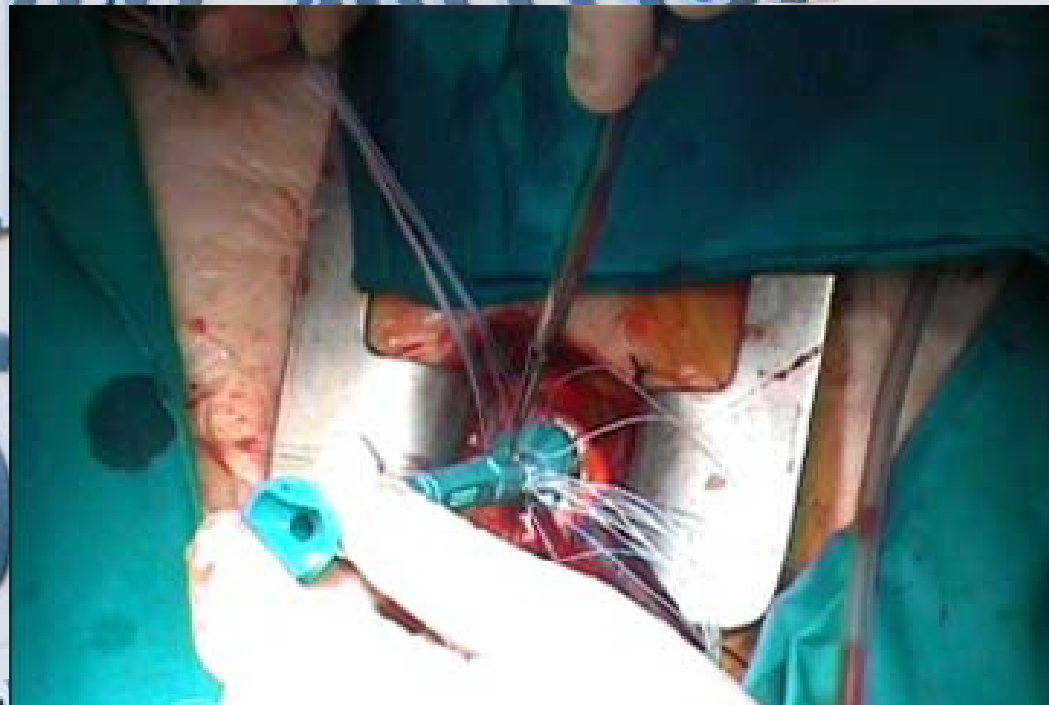


A PROPENSITY SCORE ANALYSIS IN HIGH-RISK OPERABLE PATIEN

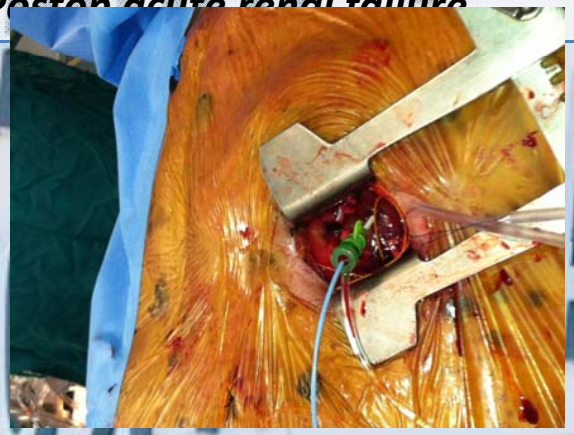
A. Vazquez, T. Heredia, L. Donate, C. Hernandez, M Schuler, A. Berbel, A. Bel, M. Perez, F. Valera, S. Torregrosa, JA. Montero.
H. Universitari i Politecnic La Fe, Valencia, Spain.

e 1. PREOPERATIVE CHARACTERISTICS

	TA - TAVI	MINI - AVR	
	11	11	p
tic Euroscore	19.67+/-10.35	16.68+/-5.46	ns
years)	79.18+/-5.60	76.45+/-5.28	ns
gender	6 (54.5%)	5 (45.5%)	ns
	4 (36.4%)	7 (63.4%)	ns
h. Art. Dis.	6 (54.5%)	2 (18.2%)	ns
stroke	1 (9.1%)	3 (27.3%)	ns
renal failure	0 (0%)	1 (9.1%)	ns
impairment	3 (27.3%)	2 (18.2%)	ns
. hypertension	3 (27.3%)	0 (0%)	ns
A III/IV	11 (100%)	11 (100%)	ns

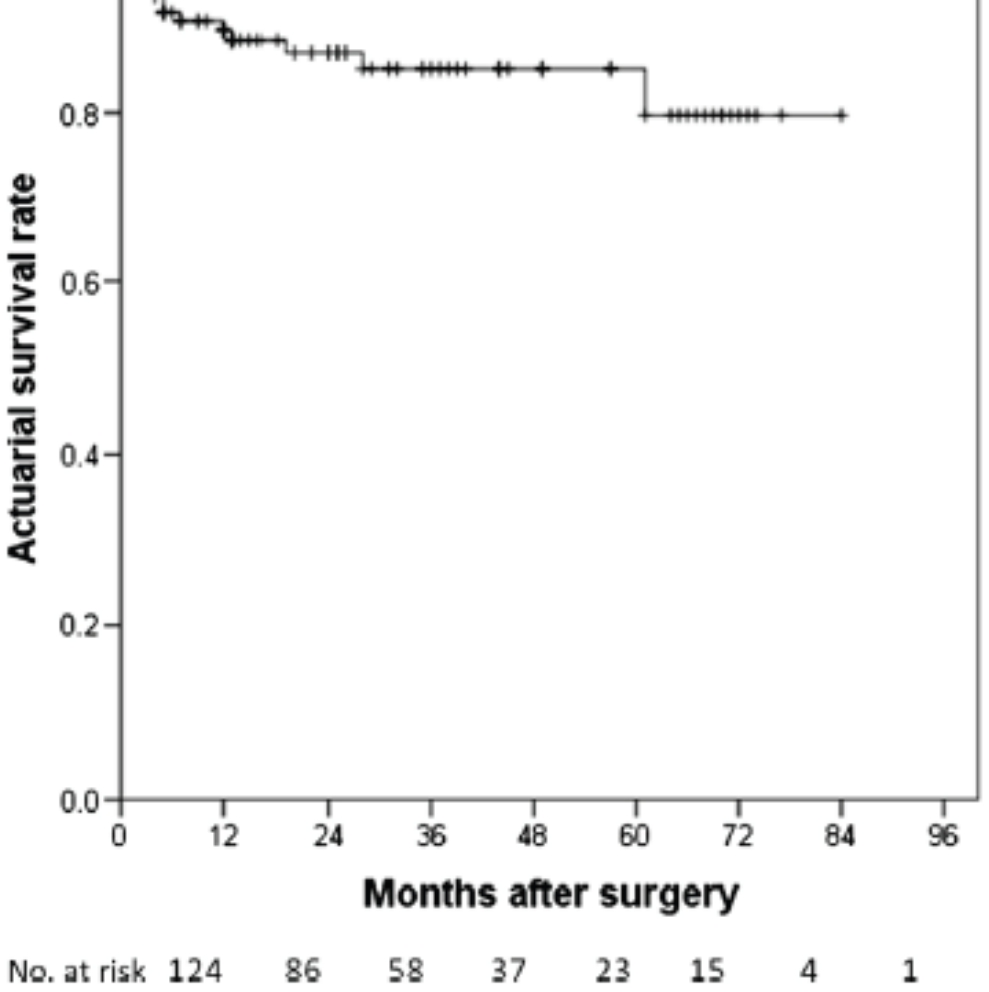
Table 2. OPERATIVE OUTCOMES

	TA - TAVI	MINI - AVR
n	11	11
Operative mortality	2 (18.2%)	1 (9.1%)
MACCE	3 (27.3%)	1 (9.1%)
Reexploration bleeding	1 (9.1%)	0 (0%)
Postop stroke	2 (18.2%)	0 (0%)
Postop AF	4 (36.4%)	1 (9.1%)
Permanent pacemaker	1 (9.1%)	0 (0%)
Postop acute renal failure	4 (36.4%)	2 (18.2%)



Variables	Total (n = 124)
cending aortic/hemiarch replacement, n (%)	106 (85.5)
tal arch replacement, n (%)	18 (14.5)
ncomitant procedures, n (%)	28 (21.8)
Bentall operation	9
Aortic valve replacement	4
Coronary artery bypass grafting	11
Other procedures	6
ean cardiopulmonary bypass time, min; ±SD	128.7 ± 40.9
ean aortic crossclamp time, min; ±SD	91.3 ± 34.4
erative death, n (%)	6 (4.8)
oke, n (%)	22 (17.7)
spiratory failure, n (%)	27 (21.8)
exploration for bleeding, n (%)	4 (3.2)
ep sternal infection, n (%)	4 (3.2)
edian intensive care unit stay, d	4
edian length of hospital stay, d	21
olonged hospitalization (>30 d), n (%)	25 (20.1)

, Standard deviation.



Outcomes of contemporary emergency open surgery for type A acut aortic dissection in elderly patients

Akihito Matsushita, MD,[a] Minoru Tabata, MD, MPH,[a] Toshihiro Fukui, MD,[a] Yasunori Sato, PhD,[b] Shigefumi Matsuyama, MD,[c] Tomoki Shimokawa, MD,[c] and Shuichiro Takanashi, MD[a]

La edad ‘biológica’ no siempre se
rrelaciona con la edad ‘cronológica’

Sundermann [a,b,*], Anika Dademasch [a,*], Julian Praetorius [a], Jörg Kempfert [a], Todd Dewey [c], Volkmar Falk [b], Friedrich-Wilhelm Mohr [a], Thomas Walther [a]

2

bution of frailty points in percent (%) in the three risk groups concerning e parameters of the CAF.

y test	Frailty points	Not frail	Moderately frail	Severely frail
trength	0	75	46	19
	1	25	54	81
ng speed	0	97	68	0
	1	3	32	100
ce	0	64	26	0
	1	29	29	4
	2	7	26	4
	3	0	16	33
	4	0	3	59
p from chair	0	26	1	0
	1	44	8	0
	2	20	18	4
	3	10	58	0
	4	0	15	96
p a pen	0	41	5	0
	1	52	54	7
	2	7	24	8
	3	0	9	15
	4	0	8	70
n and remove a jacket	0	73	23	11
	1	20	41	4
	2	7	20	15

Table 3
Mortality rate among each CAF category.

	CAF category		
	Not frail (1–10 points)	Moderately frail (11–25 points)	Severe (26–3
Survival			
Alive % within	96.4	92.2	78.3

uación IMC: _____

r: IMC < 18.5 = 1

ore: IMC < 19.1 = 1

t de Laboratorio

oumina en sangre puntuación: _____

< 3.5 (g/dL) = 1

≥ 3.5 = 0

lumen expiratorio Forzado en el primer segundo (FEV1) puntuación: _____

< 2.4 L = 1

≥ 2.4 L = 0

eatinina score: _____

< 1.2 = 0

≥ 1.2 = 1

enotipo

ntuación de Agotamiento _____

Mucho tiempo o (3) Todo el tiempo = 1

as respuestas=0

as dos cuestiones tienen como intención medir el agotamiento. Si un paciente
ponde (2) " mucho tiempo" o (3) "todo el tiempo" o alguna de las siguientes
stiones, Se les puntua con punto. Cualquier otra respuesta se puntua con un 0.
a única puntuación de 1 o 0 se da a las preguntas, no se puntuan individualmente

imo mes , se ha sentido cansado
mente? [Con que frecuencia en el ultimo
sentido que todo lo que hacia era un
?]

) No/Nunca
) Algunas veces (1-2 dias)
) La mayoria del tiempo (3-4 dias)
) Todo el tiempo

O

En el ultimo mes ha sentido una debilidad inusual? [Con que frecuencia en el ultimo mes ha sentido que no podia ponerse en marcha?]

- ☐ (0) No/Nunca
- ☐ (1) Alguna vez (1-2 dias)
- ☐ (2) La mayoria del tiempo (3-4 dias)
- ☐ (3) Todo el tiempo
- ☐ (4) Rechaza

ación de lentitud: _____

Mujer:

Altura ≤ 159 cm

Velocidad ≤ 0.65 m/sec = 1

Velocidad > 0.65 m/sec = 0

Altura > 159 cm

Velocidad ≤ 0.76 m/sec = 1

Velocidad> 0.76 m/sec = 0

Hombre:

Altura ≤ 173 cm

Velocidad ≤ 0.65 m/sec = **1**

Velocidad > 0.65 m/sec = 0

Altura > 173 cm

Velocidad ≤ 0.76 m/sec = 1

lad (Fuerza de agarre) Score: _____

E

y agarre ≤ 29 Kg debilidad = 1

.1-26 y agarre ≤ 30 Kg debilidad = 1

.1-28 y agarre ≤30 Kg debilidad = 1

y agarre ≤ 32 Kg debilidad = 1

MUJER:

IMC≤ 23 y agarre ≤ 17 Kg debilidad= 1

IMC = 23.1-26 y agarre ≤ 17.3 Kg debilidad = 1

IMC = 26.1-29 y agarre ≤ 18 Kg debilidad = 1

E	10 s	10 s	10 s	0
	10 s	10 s	10 s	1
	10 s	10 s	10 s	2
	10 s	0-9 s	no	3
	0-9 s	no	no	4

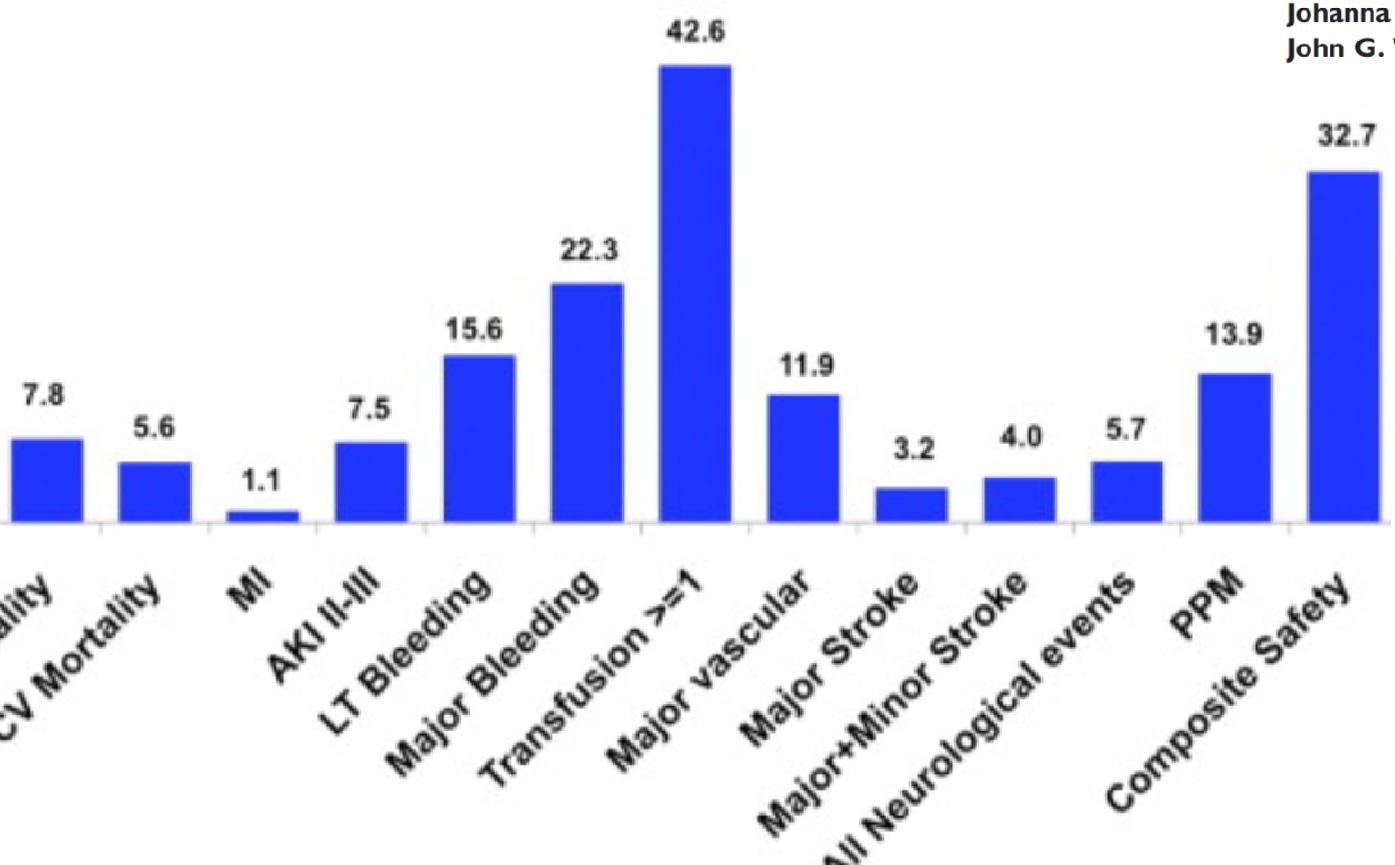
		TIEMPO	VALORES PUNTUACIÓN	SCORE
2	SUBIR A UNA SILLA		≤ 11 s = 0	
			11,1-14 s = 1	
			14,1-17 s = 2	
			> 17 s = 3	
			no = 4	
3	PONERSE O QUITARSE LA CHAQUETA		≤ 10 s = 0	
			10,1 - 15 s = 1	
			15,1 - 20 s = 2	
			> 20 s = 3	
			no = 4	
4	RECOGER UN LÁPIZ DEL SUELO		≤ 2 s = 0	
			2,1 - 4 s = 1	
			4,1 - 6 s = 2	
			> 6 s = 3	
			no = 4	
5	GIRAR 360 GRADOS	PASOS DISCONTINUOS = 2		
		PASOS CONTINUOS = 0		
		INESTABLE (SE TAMBALEA) = 2		
		ESTABLE = 0		

Muchas gracias por su atención

"Me interesa el futuro porqu
es el lugar donde pasaré el
resto de mi vida."

Outcomes After Transcatheter Aortic Valve Replacement Using Valve Academic Research Consortium Definitions: A ighted Meta-Analysis of 3,519 Patients From 16 Studies

Cardiol. 2012;59(25):2317-2326. doi:10.1016/j.jacc.2012.02.022

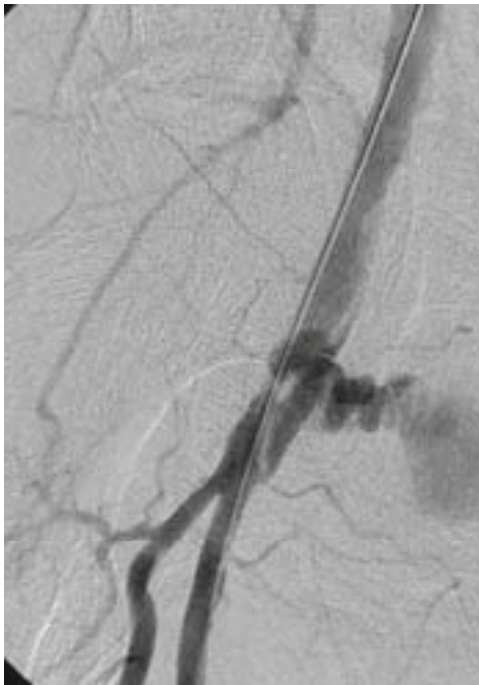


European Heart Journal (2011) 32, 205–217
doi:10.1093/eurheartj/ehq406

CLINICAL RE
Val

Standardized endpoint definitions for transcatheter aortic valve implantation clin trials: a consensus report from the Valve Academic Research Consortium†

Martin B. Leon*, Nicolo Piazza, Eugenia Nikolsky, Eugene H. Blackstone, Donald E. Cutlip, Arie Pieter Kappetein, Mitchell W. Krucoff, Michael Ma Roxana Mehran, Craig Miller, Marie-angèle Morel, John Petersen, Jeffrey Johanna J.M. Takkenberg, Alec Vahanian, Gerrit-Anne van Es, Pascal Vra John G. Webb, Stephan Windecker, and Patrick W. Serruys



ajor Differences in 30-Day Outcomes in High-Risk Patients Randomized to Versus On-Pump Coronary Bypass Surgery: The Best Bypass Surgery Trial

. Møller, Mario J. Perko, Jens T. Lund, Lars W. Andersen, Henning Kelbæk, Jan K. Madsen, Per Winkel, Christian Gluud and Daniel A. Steinbrüchel

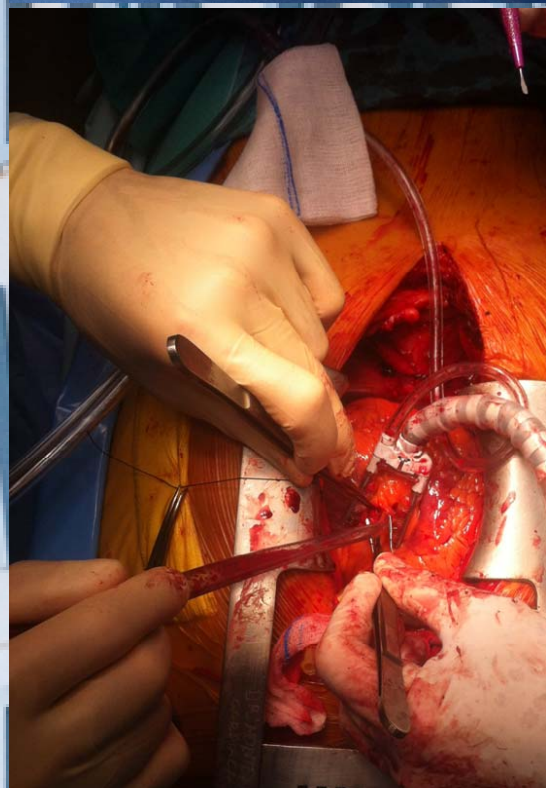
Preoperative Data*

	Off-Pump (n=176)	On-Pump (n=163)
SD), y	76.1 (5.2)	75.6 (4.9)
	172 (98)	162 (99)

Primary Outcome After 30 Days

	Off-Pump (n=176)	On-Pump (n=163)	RR	95% CI	*P*
primary outcome*	27 (15)	30 (18)	0.83	0.52–1.34	0.47
nortality	6 (3.4)	11 (6.7)	0.51	0.19–1.34	0.21
infarction	9 (5.1)	15 (9.2)	0.56	0.25–1.24	0.20
est with successful resuscitation	2 (1.1)	3 (1.8)	0.62	0.10–3.65	0.67
c output syndrome	7 (4.0)	10 (6.1)	0.65	0.25–1.66	0.46
	7 (4.0)	6 (3.7)	1.08	0.37–3.15	1.00
eintervention†	1 (0.6)	3 (1.8)	0.31	0.03–2.94	0.36

re numbers (percentages). RR indicates relative risk; CI, confidence interval.
se mortality, acute myocardial infarction, cardiac arrest with successful resuscitation, low cardiac output cardiogenic shock, stroke, and coronary reintervention.
ry artery bypass grafting or percutaneous coronary intervention.



-Pump versus On-Pump Coronary-Artery
Bypass Grafting in Elderly Patients

CLUSIONS

atients 75 years of age or older, there was no significant difference between
ump and off-pump CABG with regard to the composite outcome of death,
ke, myocardial infarction, repeat revascularization, or new renal-replacement
apy within 30 days and within 12 months after surgery. (Funded by Maquet;
CABE ClinicalTrials.gov number, NCT00719667.)