

**La TAVI oggi è una metodica consolidata.
Analizziamo i risultati immediati e a distanza
della TAVI. La stiamo usando nei pazienti giusti?**

**Francesco Bedogni
IRCCS
Policlinico San Donato**



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VIII CONGRESSO NAZIONALE ECOCARDIOCHIRURGIA 2016

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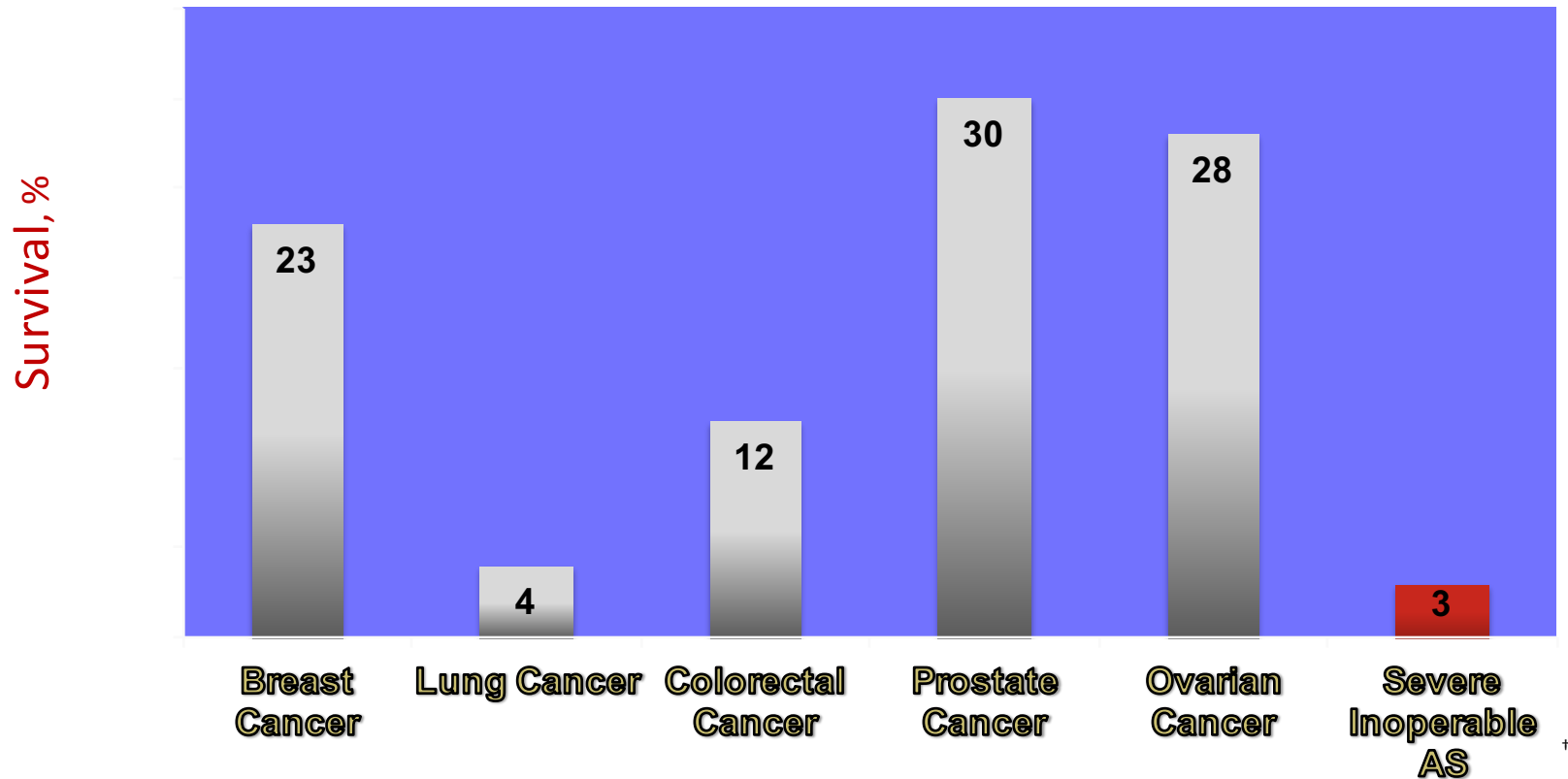
DIRETTORI
ANTONIO MANTERO
GIUSEPPE TARELLI

**COORDINATORI
ESECUTIVI**
FRANCESCO ALAMANNI
EMANUELE CATENA
GIOVANNI CORRADO
CORRADO LETTIERI

Symptomatic Aortic Stenosis

Mortality With Standard Therapy

5-Year Survival: Metastatic Cancer*



* National Institutes of Health. National Cancer Institute. Surveillance Epidemiology and End Results. Cancer Stat Fact Sheets. <http://seer.cancer.gov/statfacts/>. Accessed November 16, 2010.

† Using constant hazard ratio. Data on file, Edwards Lifesciences LLC.

2014 – AHA/ACC TAVI Guidelines

Nishimura et al. JACC

Class I:

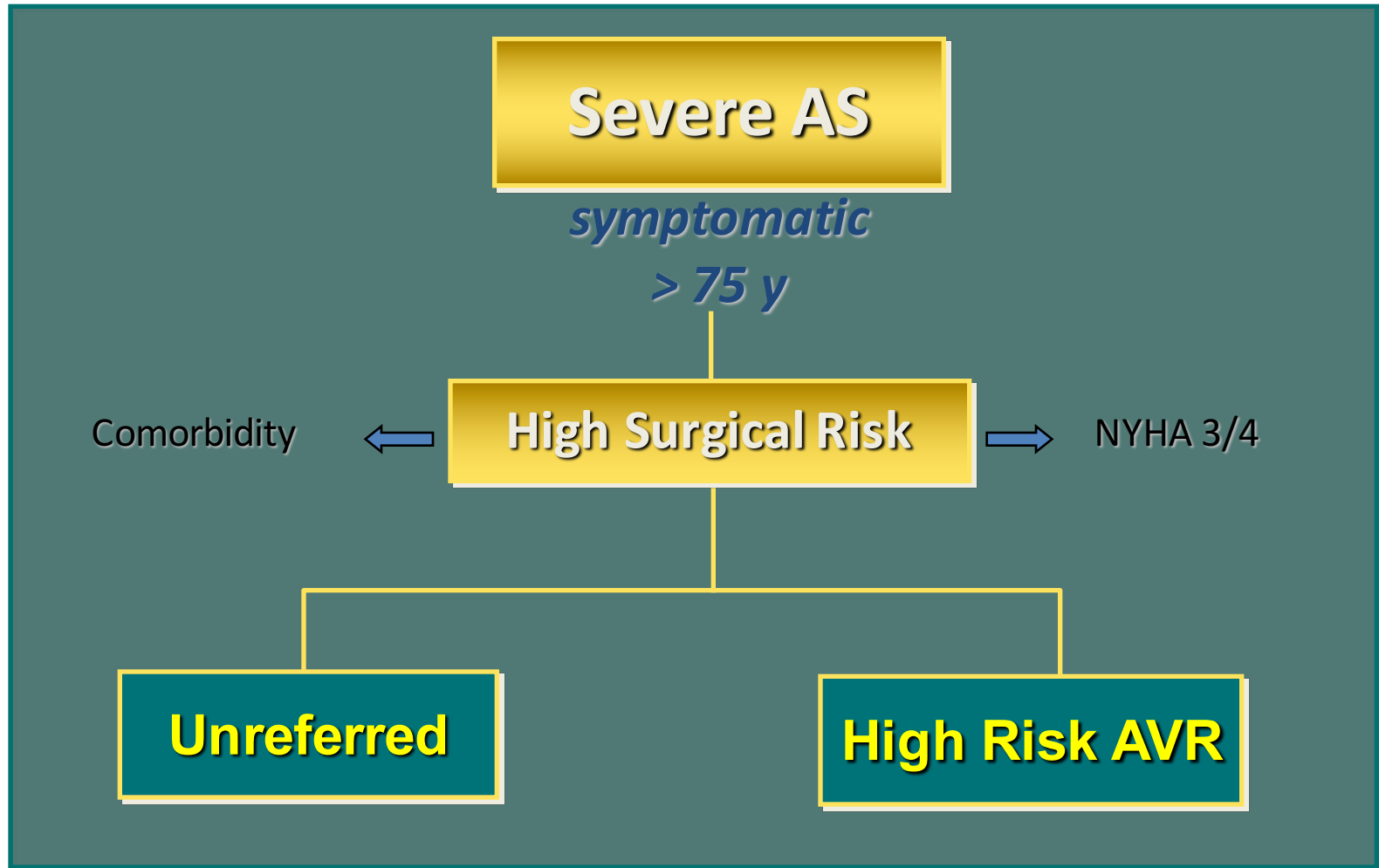
- Heart Valve Team should collaborate on decisions
- Pts not suitable for AVR and survival > 12 mos

Class IIa:

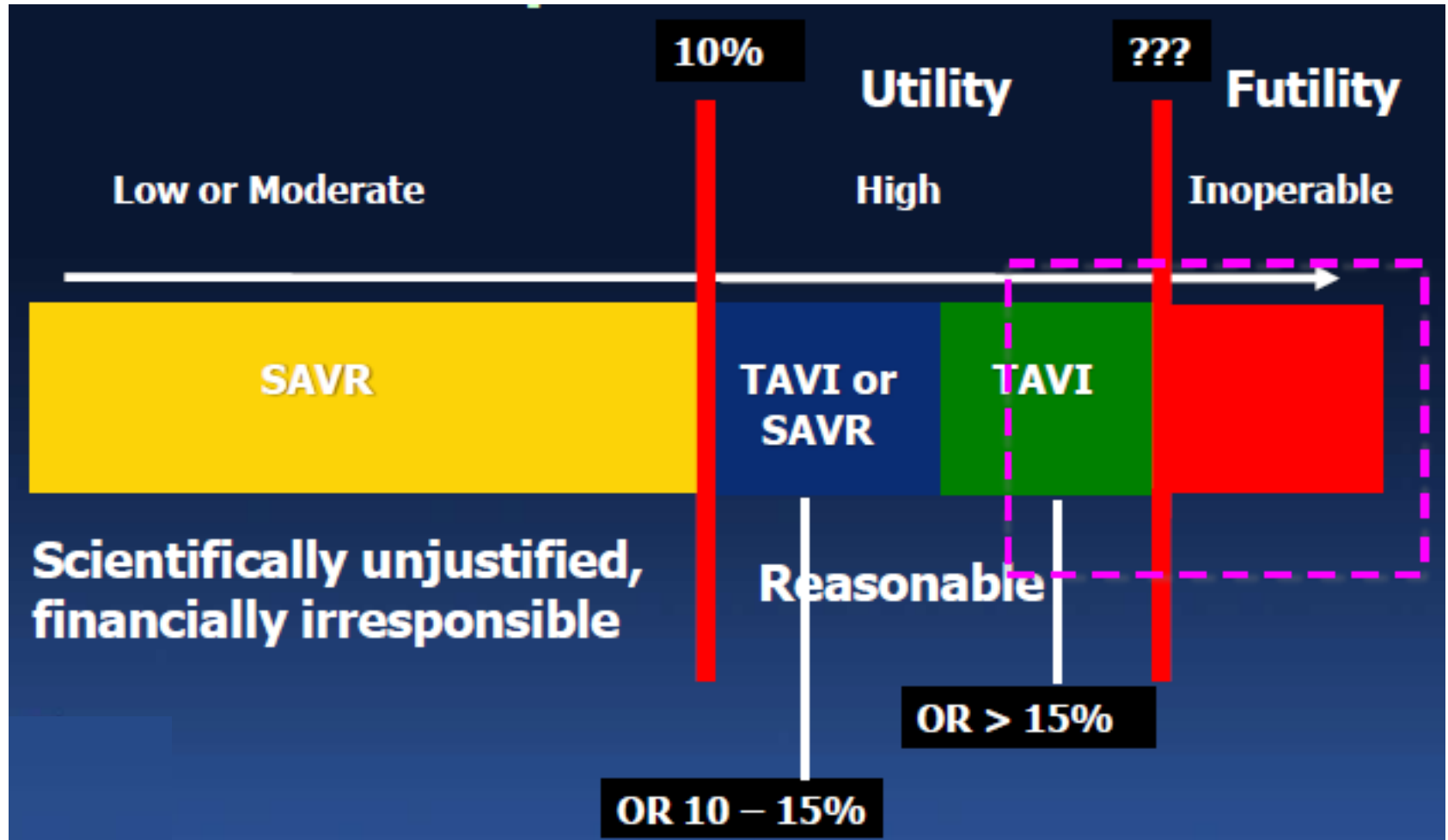
- Reasonable alternative to surgical AVR in high surgical risk pts

Recommendations	COR	LOE
Surgical AVR is recommended in patients who meet an indication for AVR (Section 3.4) with low or intermediate surgical risk (Section 2.5 in the full-text guideline)	I	A
For patients in whom TAVR or high-risk surgical AVR is being considered, members of a Heart Valve Team should collaborate to provide optimal patient care	I	C
TAVR is recommended in patients who meet an indication for AVR for AS who have a prohibitive surgical risk and a predicted post-TAVR survival >12 mo	I	B
TAVR is a reasonable alternative to surgical AVR in patients who meet an indication for AVR (Section 3.4) and who have high surgical risk (Section 2.5 in the full-text guideline)	IIa	B
Percutaneous aortic balloon dilation may be considered as a bridge to surgical or transcatheter AVR in severely symptomatic patients with severe AS	IIb	C
TAVR is not recommended in patients in whom existing comorbidities would preclude the expected benefit from correction of AS	III: No Benefit	B

CURRENT Candidates for Transcatheter AVR





Current TAVI eligibility according to operative risk

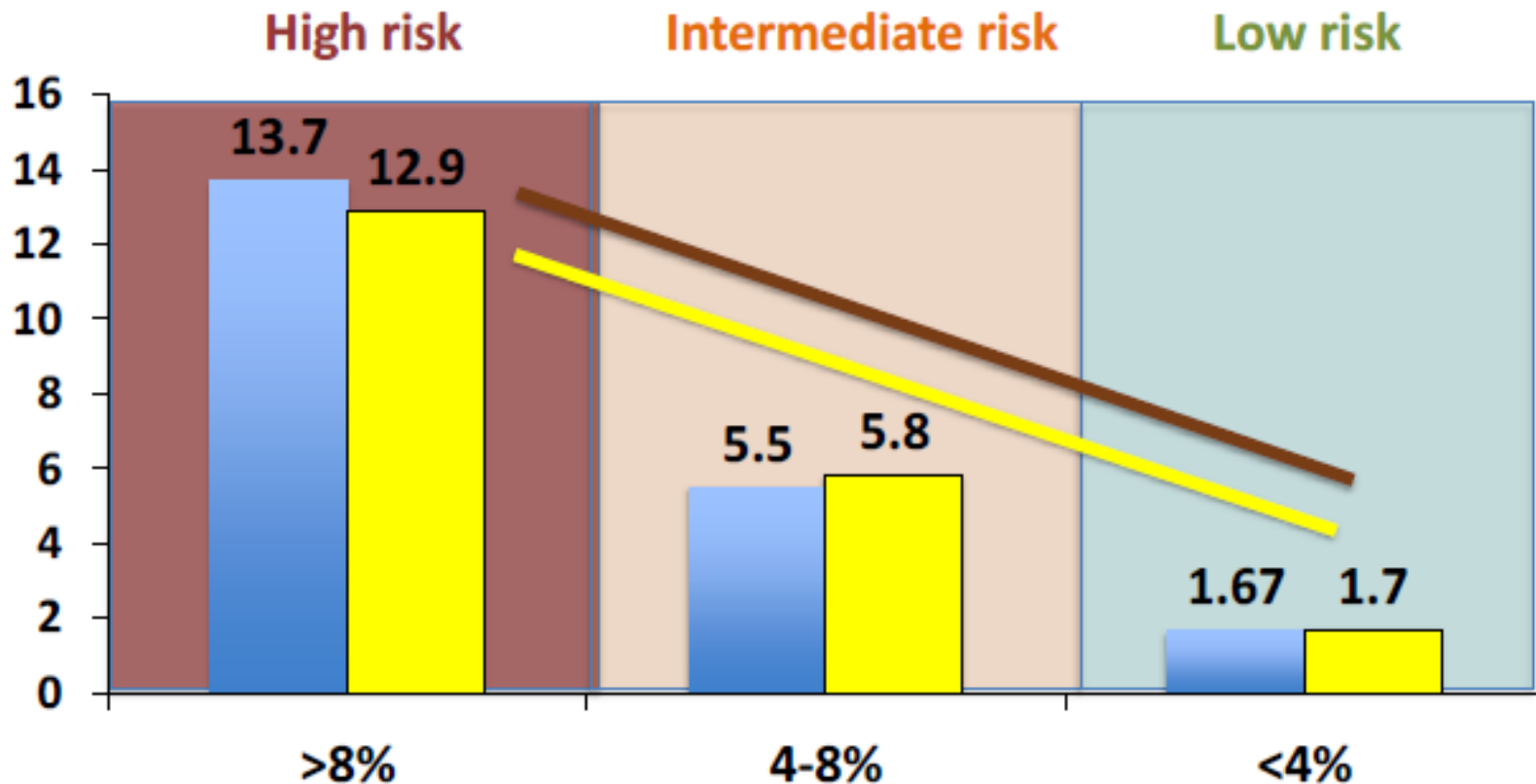


SARV STS Database 2002-2010 (141,905 Pts)

- 6.2% High risk (STS > 8%)
- 13.9% Intermediate risk (STS 4-8%)
- 79.9% Low risk (STS <4%)

SARV STS Database (141,905)

-  Predicted mortality at 30 days according to STS score
-  Observed mortality at 30 days

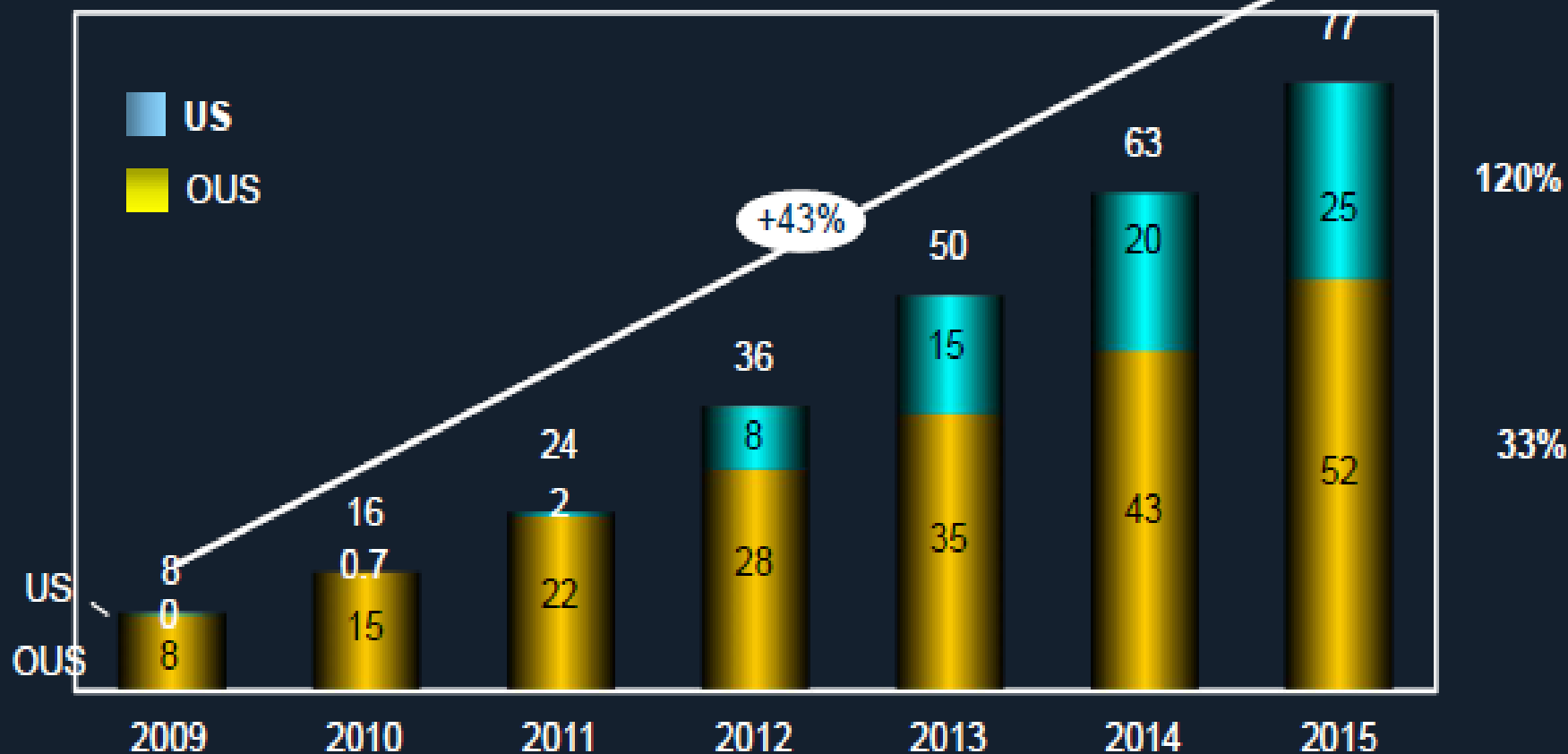


TAVR Procedures

TAVR
Thousands of Procedures

\$1.8 Billion

09-15 CAGR
Percentage

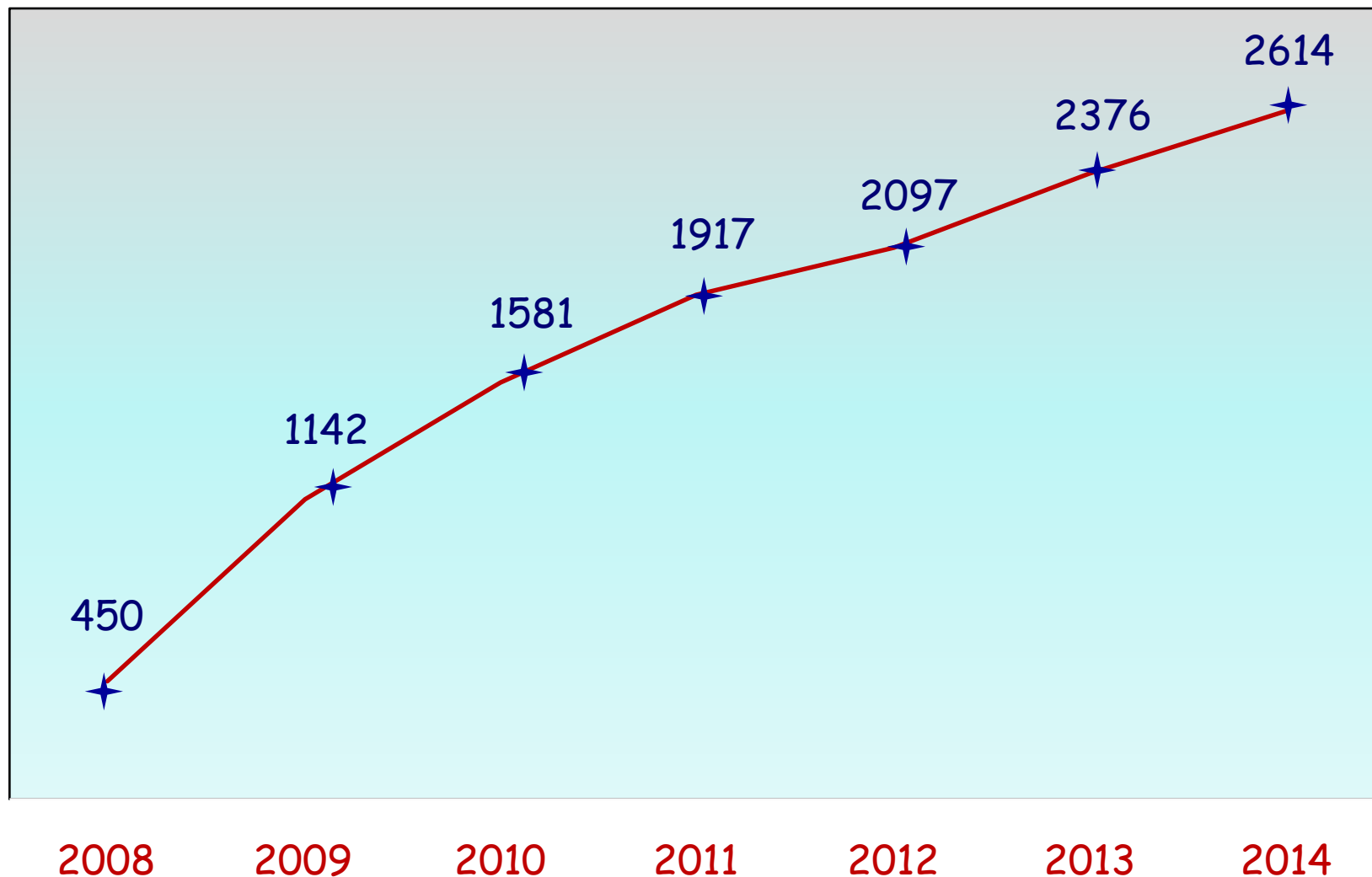




Numero impianti TAVI - Italia

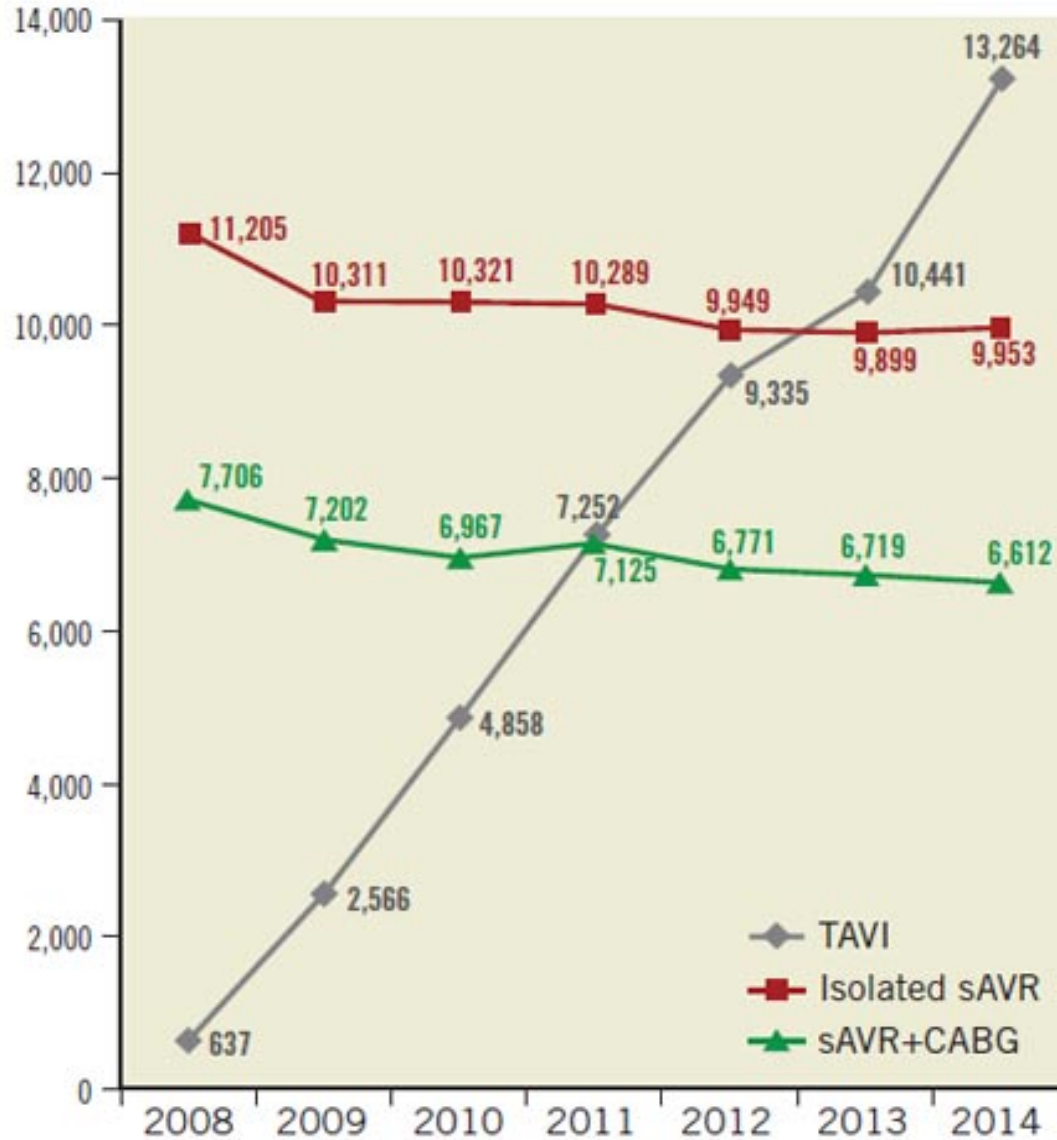
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Fonte: adattato da Società Italiana di Cardiologia Invasiva - GISE





TAVI in Germania



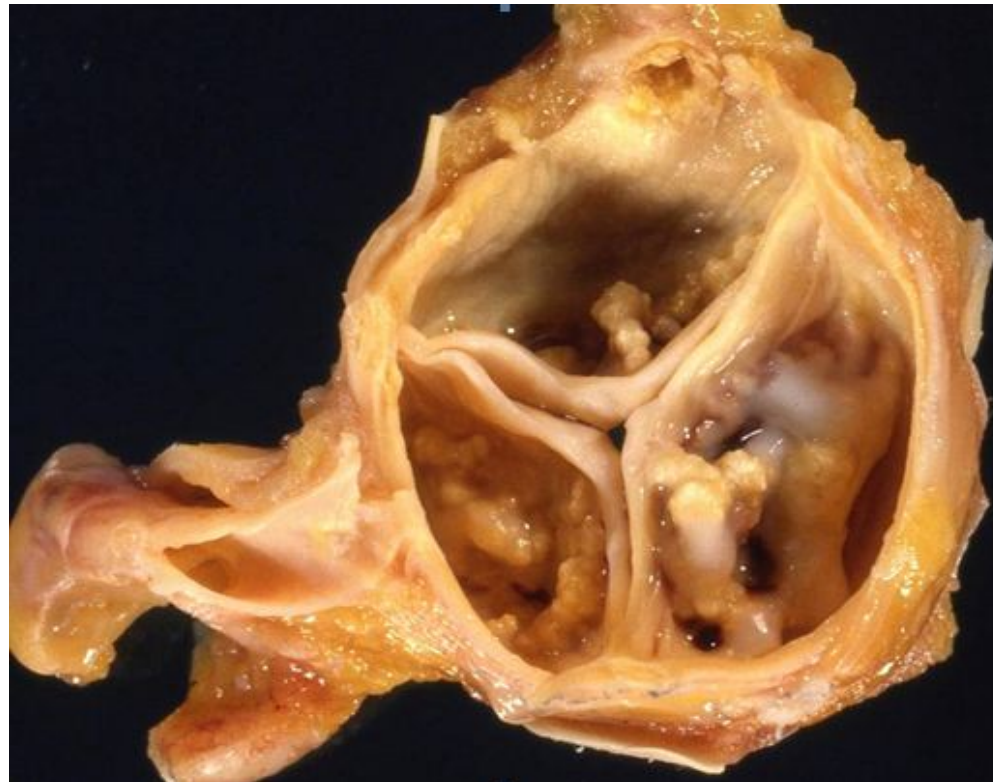
Degenerative aortic stenosis

Prevalence: 2.5 % at 70 years and 8% at 85 years

Severe aortic stenosis 3.4%

1.000.000 pts in Europe

540.000 in USA

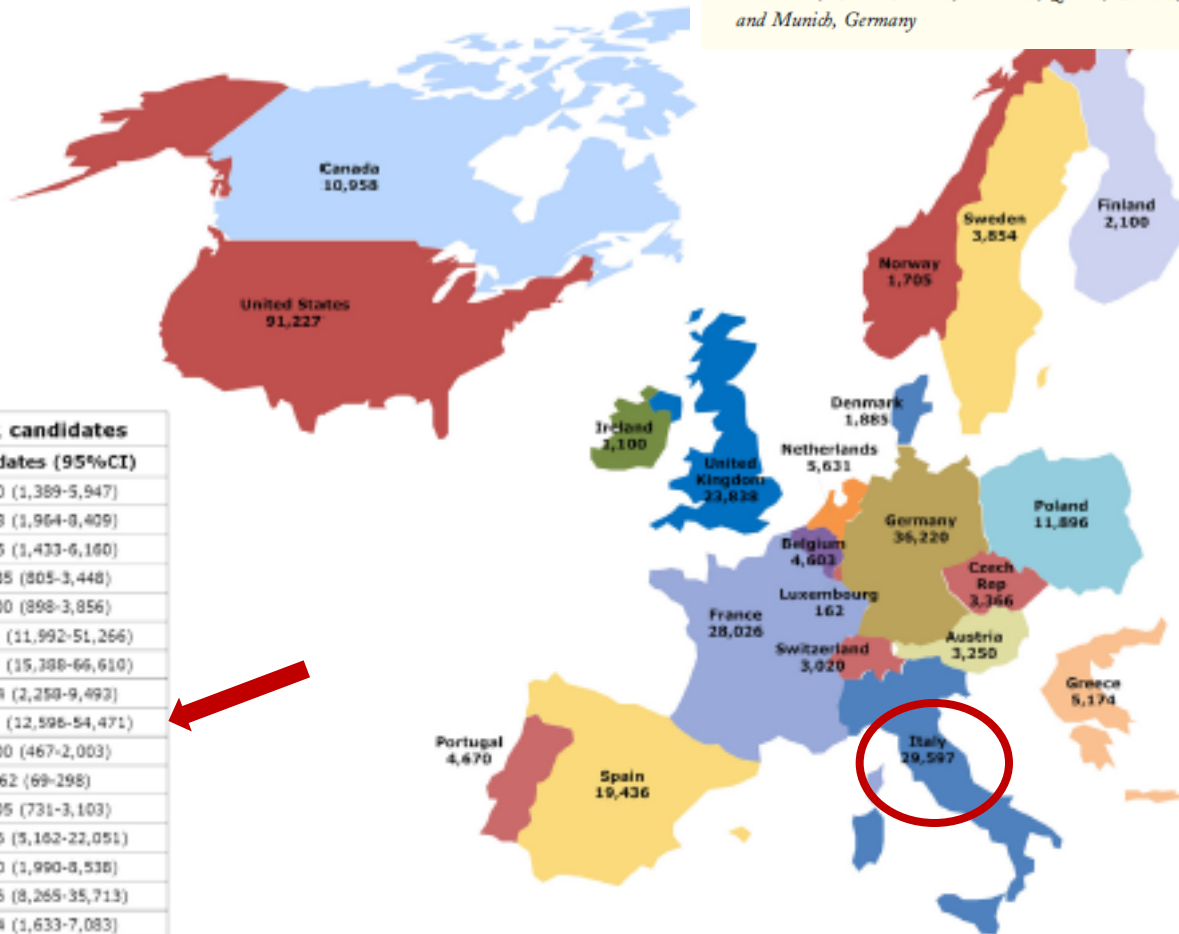




Aortic Stenosis in the Elderly

Disease Prevalence and Number of Candidates
for Transcatheter Aortic Valve Replacement:
A Meta-Analysis and Modeling Study

Ruben L. J. Osnabrugge, MS,* Darren Mylotte, MD,†† Stuart J. Head, MS,*
Nicolas M. Van Mieghem, MD,§ Vuyisile T. Nkomo, MD, MPH,|| Corinne M. LeReun, MS,¶
Ad J. J. C. Bogers, MD, PhD,* Nicolò Piazza, MD, PhD,†# A. Pieter Kappetein, MD, PhD*
*Rotterdam, the Netherlands; Montreal, Quebec, Canada; Galway and Cork, Ireland; Rochester, Minnesota;
and Munich, Germany*



Total number of TAVR candidates

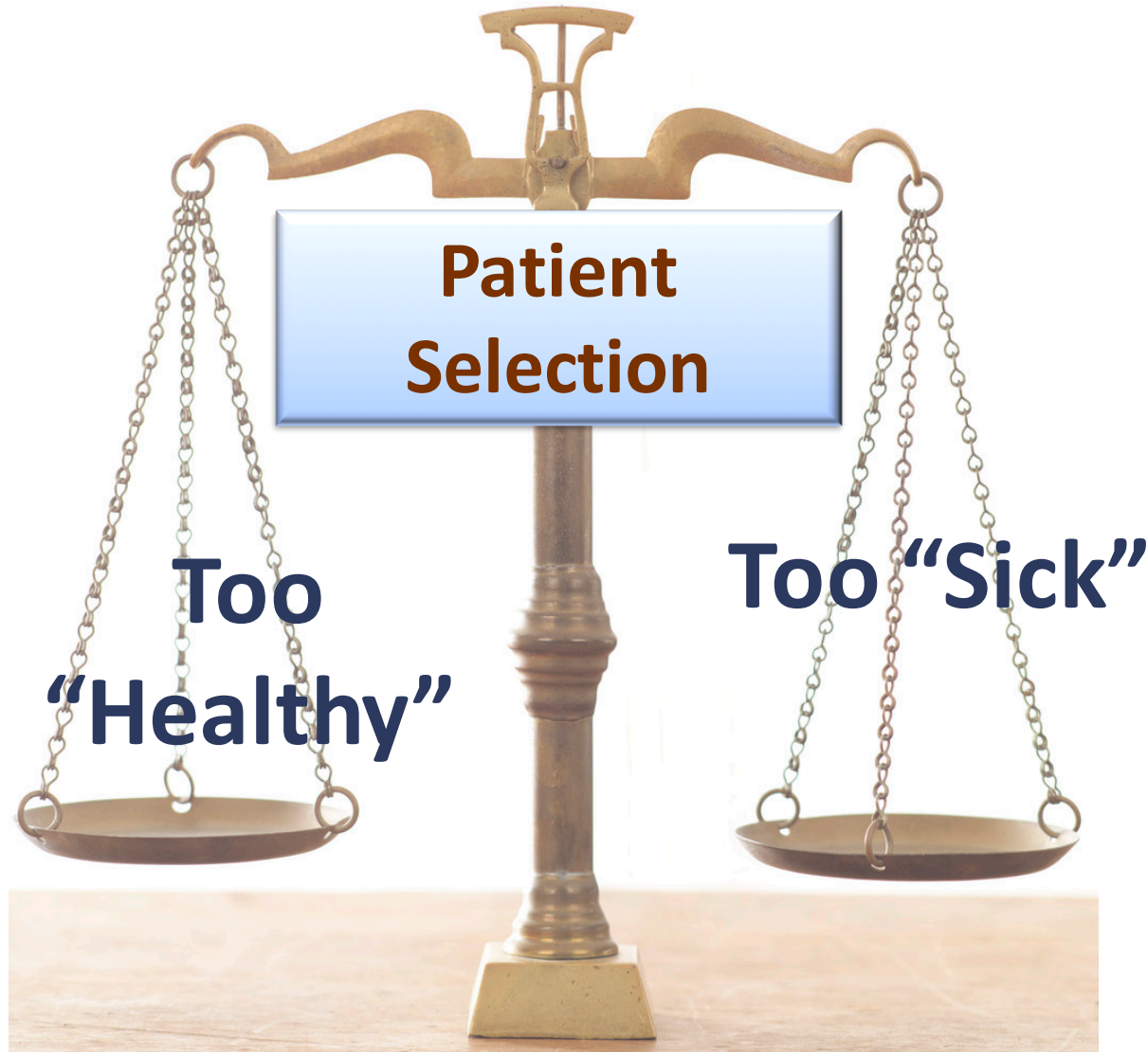
Country	Candidates (95%CI)
Austria	3,250 (1,389-5,947)
Belgium	4,603 (1,964-8,409)
Czech Republic	3,336 (1,433-6,160)
Denmark	1,885 (805-3,448)
Finland	2,100 (898-3,856)
France	28,026 (11,992-51,266)
Germany	36,220 (15,388-66,610)
Greece	5,174 (2,258-9,493)
Italy	29,597 (12,596-54,471)
Ireland	1,100 (467-2,003)
Luxembourg	162 (69-298)
Norway	1,705 (731-3,103)
Poland	11,896 (5,162-22,051)
Portugal	4,670 (1,990-8,538)
Spain	19,436 (8,265-35,713)
Sweden	3,854 (1,633-7,083)
Switzerland	3,020 (1,280-5,554)
The Netherlands	5,631 (2,379-10,379)
The United Kingdom	23,838 (10,554-43,461)
Total 19 European countries	189,836 (80,281-347,372)*
The United States	91,227 (38,885-165,875)
Canada	10,958 (4,688-19,995)
Total North America	102,558 (43,612-187,002)*

Number of potential TAVI candidates/nation following the current Indications : Inoperable, HR STS > 10

Ideal patient for TAVI



Patient Selection Risk score





NEGATIVE IMPACT OF COMORBIDITIES ON TAVI OUTCOMES

Transcatheter Aortic Valve Implantation in Patients With “Porcelain” Aorta (from a Multicenter Real World Registry)

Ralf Zahn, MD^{1*}, Rudolf Schiele, MD², Ulrich Gerckens, MD³, Axel Linke, MD⁴, Horst Sievert, MD⁵, Philipp Kahlert, MD⁶, Rainer Hambrecht, MD⁷, Stefan Sack, MD⁸, Mohamed Abdel-Wahab, MD⁹, Ellen Hoffmann, MD¹, and Jochen Seeges, MD¹, on behalf of the German Transcatheter Aortic Valve Interventions Registry Investigators

The presence of severe atherosclerosis of the ascending aorta, and its extreme form the “porcelain” aorta, is associated with a worse clinical outcome in patients undergoing surgical aortic valve replacement. Percutaneous transcatheter aortic valve implantation (TAVI) for severe asymptomatic aortic stenosis can overcome this problem: 1,374 TAVI procedures were performed at 27 hospitals in 147 patients (10.7% with and 1,227 (89.3%) without a porcelain aorta. The mean reported prevalence of a porcelain aorta at the hospitals was 7.8% ± 14.8% (range 0% to 70%). Diabetes mellitus (46.3% vs 33.2%, p = 0.00018), chronic obstructive pulmonary disease (45.5% vs 22.2%, p < 0.0001), and peripheral arterial obstructive disease (34.7% vs 20.0%, p < 0.0001) were more prevalent in

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Effect of Body Mass Index on Short- and Long-term Outcomes After Transcatheter Aortic Valve Implantation

Robert M.A. van der Boon, MSc¹, Alaide Chieffo, MD², Nicolas Dumonteil, MD³, Didier Tchetché, MD⁴, Nicolas M. Van Mieghem, MD⁵, Gill L. Buchanan, MChB⁶, Olivier Vahdas, MD⁷, Bertrand Marcheix, MD, PhD⁸, Patrick W. Serruys, MD, PhD⁹, Jean Fajadet, MD¹⁰, Antonio Colombo, MD, PhD¹¹, Didier Carué, MD, PhD¹², Roo T. van Domburg, PhD¹³, and Peter P.T. de Jaegere, MD, PhD¹⁴, on behalf of the PRAGMATIC-Plus Researchers

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ICA-10628; No. of Pages 3

International Journal of Cardiology xxx (2013) xxx–xxx

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journal homepage: www.elsevier.com/locate/ijcard

Letter to the Editor

One year clinical outcomes in patients with severe aortic stenosis and left ventricular systolic dysfunction undergoing transcatheter aortic valve implantation: Results from the Italian CoreValve Registry¹²⁷

Claudia Fiorina^{1,8*}, Marco Barbanti^{1,8}, Marco De Carlo⁴, Federico De Marco⁹, Giuseppe Tarantini¹, Francesco Bedogni⁸, Gennaro Santoro¹, Anna Sorina Petronio¹, Gian Paolo Ussia¹, Diego Maffeo⁴, Corrado Tamburino¹⁰, Federica Ettori⁹

Transcatheter Aortic Valve Implantation in Patients With Severe Left Ventricular Dysfunction

Immediate and Mid-Term Results, A Multicenter Study

Chiara Fraccaro, MD; Rasha Al-Lamee, MA, MRCP; Giuseppe Tarantini, MD, PhD; Francesco Maisano, MD; Massimo Napolitano, MD; Matteo Montorfano, MD; Anna Chiara Frigo, MSc; Sabino Illiceto, MD; Gino Gerosa, MD; Giambattista Isabella, MD; Antonio Colombo, MD

Catheterization and Cardiovascular Interventions 91(348-355) (2013)

VALVULAR AND STRUCTURAL HEART DISEASES

Original Studies

Impact of Aortic Valve Calcification on the Outcome of Transcatheter Aortic Valve Implantation: Results from the Prospective Multicenter German TAVI Registry

Stephan Staubach,^{1*} mo, Jennifer Franke,¹ mo, Ulrich Gerckens,² mo, Gerhard Schuler,³ mo, Ralf Zahn,⁴ mo, Holger Eggebrecht,⁵ mo, Rainer Hambrecht,⁶ mo, Stefan Sack,⁷ mo, Gert Richardt,⁸ mo, Martin Horack,⁹

Röschl et al. Accepted Cardiovascular Disease

Pulmonary hypertension is associated with worse early and late outcomes after aortic valve replacement: Implications for transcatheter aortic valve replacement

Eric E. Roselli, MD,¹ Anas Abdel Aziz, MD, MSc,² Penny L. Houghtaling, MS,³ Wael A. Jaber, MD,⁴ and Eugene H. Blackstone, MD^{5*}

Objectives: Our objectives were to determine the prevalence of pulmonary hypertension (PH) in patients
Journal of the American College of Cardiology
© 2013 by the American College of Cardiology Foundation
Published by Elsevier Inc. Vol. 61, No. 1, 2013
ISSN 0895-5056
http://dx.doi.org/10.1016/j.jacc.2013.01.018

Heart Valve Disease

Outcomes of Patients With Chronic Lung Disease and Severe Aortic Stenosis Treated With Transcatheter Versus Surgical Aortic Valve Replacement or Standard Therapy

Insights From the PARTNER Trial (Placement of Aortic Transcatheter Valve)

Danny Dvir, MD,¹ Ron Wakeman, MD,² Ismael M. Barbash, MD,³ Sushol K. Kodali, MD,⁴ Lars G. Svensson, MD, PhD,⁵ E. Murat Tuzum, MD,⁶ Ke Xu, PhD,⁷ Salar Minha, MD,⁸ Maria C. Alca, MD,⁹ Wilson Y. Szary, MD,¹⁰ Vinod H. Thourani, MD,¹¹ Raj Makkar, MD,¹²

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Impact of Diabetes Mellitus on Early and Midterm Outcomes After Transcatheter Aortic Valve Implantation (from a Multicenter Registry)

Federico Corroto, MD^{1*}, Fabrizio D’Ascenzo, MD², Francesco Giostana, MD³, Stefano Salizzoni, MD⁴, Corrado Tamburino, MD⁵, Giuseppe Tarantini, MD⁶, Patrizia Presbitero, MD⁷, Marco Barbanti, MD⁸, Valeria Gasparotto, MD⁹, Marco Mentasti, MD¹⁰, Massimo Napolitano, MD¹¹, Marco L. Rossi, MD¹², Michele La Torre, MD¹³, Gaetano Ferraro, MD¹⁴, Pierluigi Onofri, MD¹⁵, Paolo Scacciati, MD¹⁶, Walter Grosso Marra, MD¹⁷, Chiara Colaci, MD¹⁸, Giuseppe Bianchi-Zoccai, MD¹⁹, Claudio Morici, MD²⁰, Maurizio D’Amico, MD²¹, Mauro Rinaldi, MD²², Francesco Gaja, MD²³, and Sebastiano Mann, MD²⁴

The Impact of Frailty Status on Survival After Transcatheter Aortic Valve Replacement in Older Adults With Severe Aortic Stenosis

A Single-Center Experience

JACC: Cardiovascular Interventions
© 2013 by the American College of Cardiology Foundation
Published by Elsevier Inc. Vol. 6, No. 10, 2013
ISSN 1936-1996
http://dx.doi.org/10.1016/j.jcin.2013.08.003

Chronic Obstructive Pulmonary Disease in Patients Undergoing Transcatheter Aortic Valve Implantation

Insights on Clinical Outcomes, Prognostic Markers, and Functional Status Changes

Michael Mok, MBBS,¹ Luis Nombelo-Franco, MD,² Eric Dussone, MD,³ Marina Urena, MD,⁴ Robert DeLanchette, MD,⁵ Daniel Doyle, MD,⁶ Jacques Vliessen, MD,⁷ Mláisia Côté, MSc,⁸ Henricus B. Ribeiro, MD,⁹ Ricardo Allende, MD,¹⁰ Brinze Lafamme, MS,¹¹ Hugo DeLanchette, MS,¹² Louis Laflamme, MS,¹³ Ignacio Amat-Santos, MD,¹⁴ Philippe Fihrist, PhD,¹⁵ François Mahais, MD,¹⁶ Josep Rodés-Cabau, MD¹⁷

Quebec City, Quebec, Canada

Objectives: This study sought to determine the effects of chronic obstructive pulmonary disease (COPD) on clinical outcomes in patients undergoing transcatheter aortic valve implantation (TAVI) and to determine the factors associated with worse outcomes in COPD patients.

Background: No data exist on the factors determining poorer outcomes in COPD patients undergoing TAVI.

Methods: A total of 319 consecutive patients (29.5% with COPD) who underwent TAVI were studied. Functional status was evaluated by New York Heart Association (NYHA) functional class, Duke Activity Status Index, and the 6-min walk test (6MWT) at baseline and at 6 to 12 months. The TAVI treatment was considered futile if the patient either died or did not improve in NYHA functional class at 6-month follow-up.

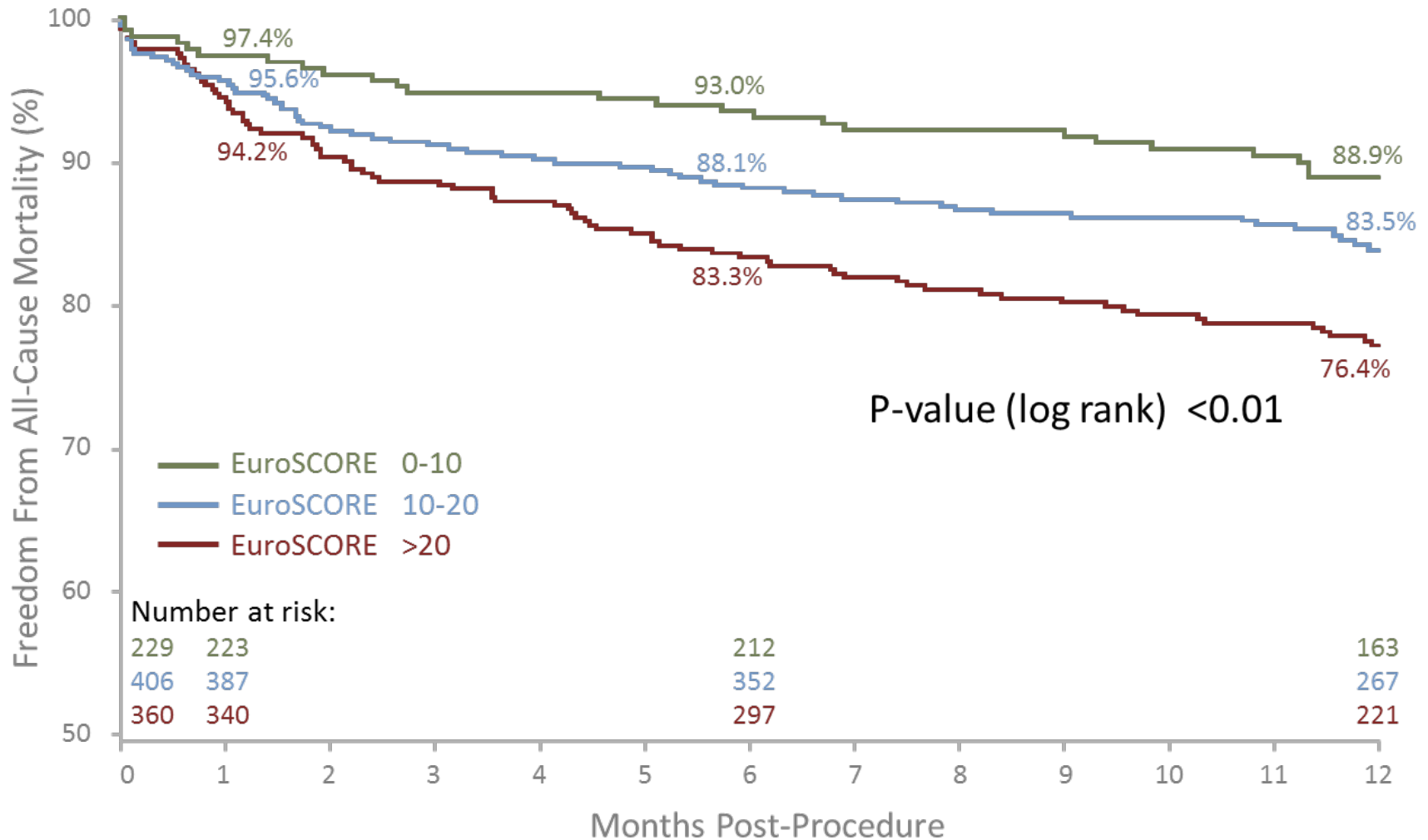
Results: Survival rates at 1 year were 70.8% in COPD patients and 84.3% in patients without COPD (p = 0.008). COPD was an independent predictor of cumulative mortality after TAVI (hazard ratio: 1.84; 95% confidence interval: 1.08 to 3.13; p = 0.024). Improvement in functional status was observed after TAVI (p < 0.001 for NYHA functional class, Duke Activity Status Index, and 6MWT), but COPD patients exhibited less (i.e., 0.55) improvement in NYHA functional class. Among COPD patients, a shorter Valvular and Congenital Heart Disease

Impact of preoperative chronic kidney disease on short- and long-term outcomes after transcatheter aortic valve implantation: A Pooled-Rotterdam-Milano-Toulouse In Collaboration Plus (PRAGMATIC-Plus) initiative substudy

Nicolas Dumonteil, MD,¹ Robert M. A. van der Boon, MSc,² Didier Tchetché, MD,³ Alaide Chieffo, MD,⁴ Nicolas M. Van Mieghem, MD,⁵ Bertrand Marcheix, MD, PhD,⁶ Gill L. Buchanan, MChB,⁷ Olivier Vahdas, MD,⁸ Patrick W. Serruys, MD, PhD,⁹ Jean Fajadet, MD,¹⁰ Antonio Colombo, MD, PhD,¹¹ Peter P. T. de Jaegere, MD, PhD,¹² and Didier Carué, MD, PhD¹³ Toulouse, France; Rotterdam, The Netherlands; and Milan, Italy

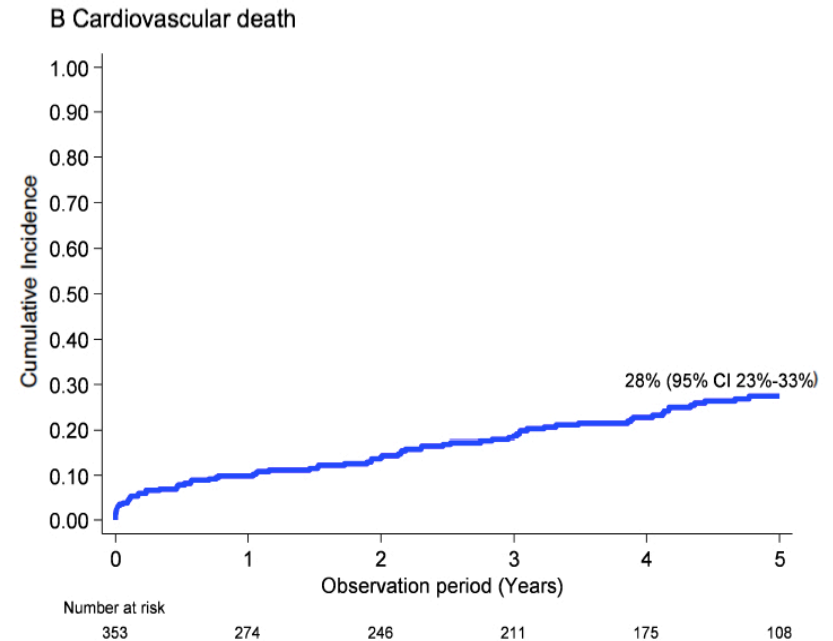
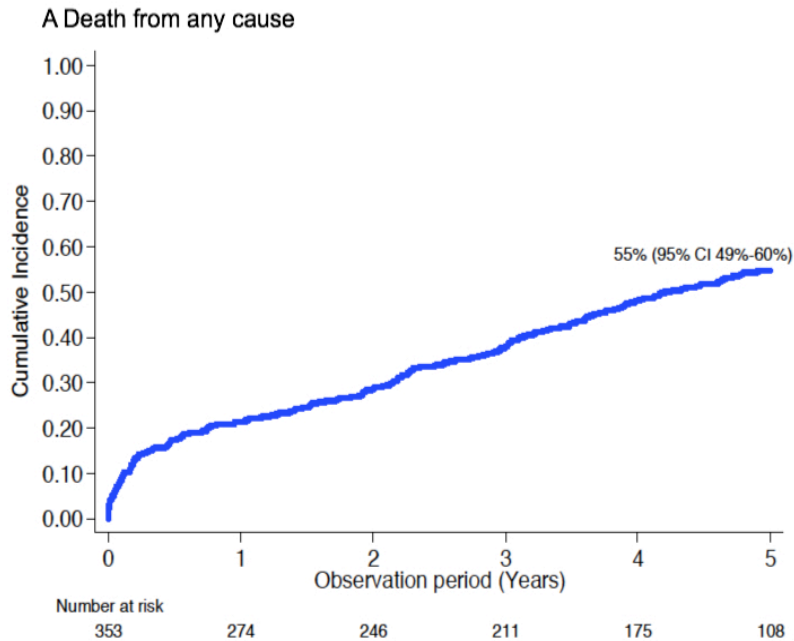


ADVANCE | Survival by EuroSCORE





Corevalve italian Registry 5 years Follow up AHJ 2015

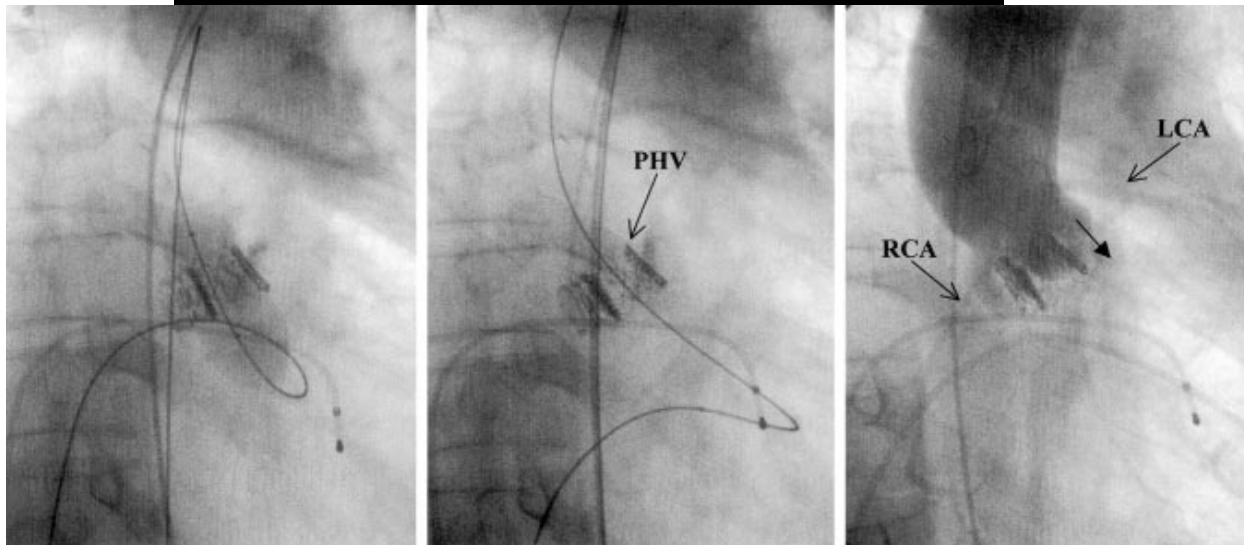


Kaplan–Meier percentage of (A) mortality rate, and (B) rate of cardiovascular mortality at 5-year follow-up



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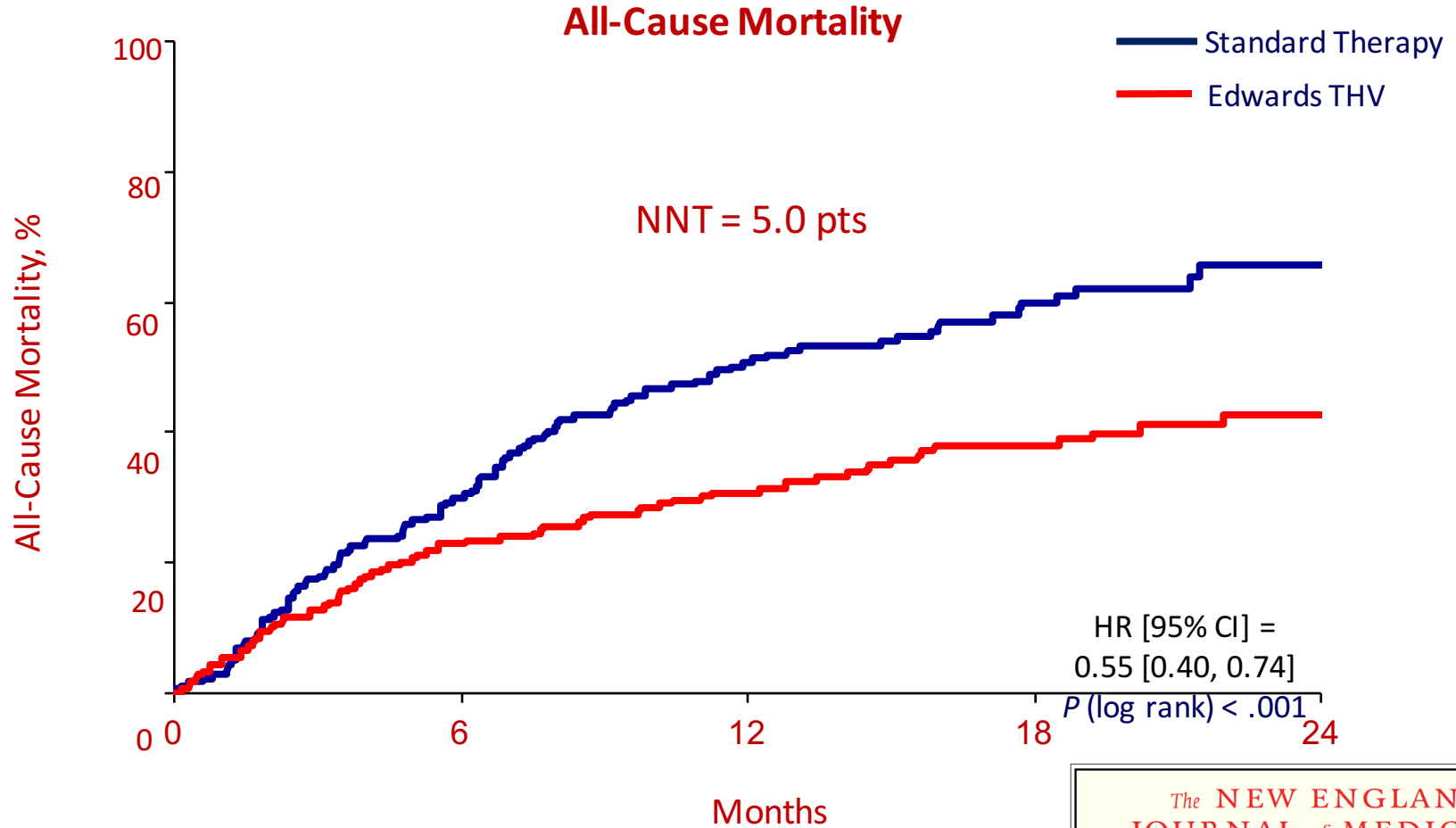
PVAR F.I.M Alain Cribier 2002





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Partner Trial cohort B Inoperable patients



The NEW ENGLAND
JOURNAL of MEDICINE

Numbers at Risk			
Edwards THV	179	138	122
Standard Therapy	179	121	83

Transcatheter Aortic-Valve Implantation
for Aortic Stenosis in Patients Who Cannot Undergo Surgery

Martin B. Leon, M.D., Craig R. Smith, M.D., Michael Mack, M.D., D. Craig Miller, M.D., Jeffrey W. Moses, M.D., Lars G. Svensson, M.D., Ph.D., E. Murat Tuzcu, M.D., John G. Webb, M.D., Gregory P. Fontana, M.D., Raj R. Makkar, M.D., David L. Brown, M.D., Peter C. Block, M.D., Robert A. Guyton, M.D., Augusto D. Pichard, M.D., Joseph E. Bavaria, M.D., Howard C. Herrmann, M.D., Pamela C. Douglas, M.D., John L. Petersen, M.D., Jodi J. Akin, M.S., William N. Anderson, Ph.D., Duolao Wang, Ph.D., and Stuart Pocock, Ph.D., for the PARTNER Trial Investigators*



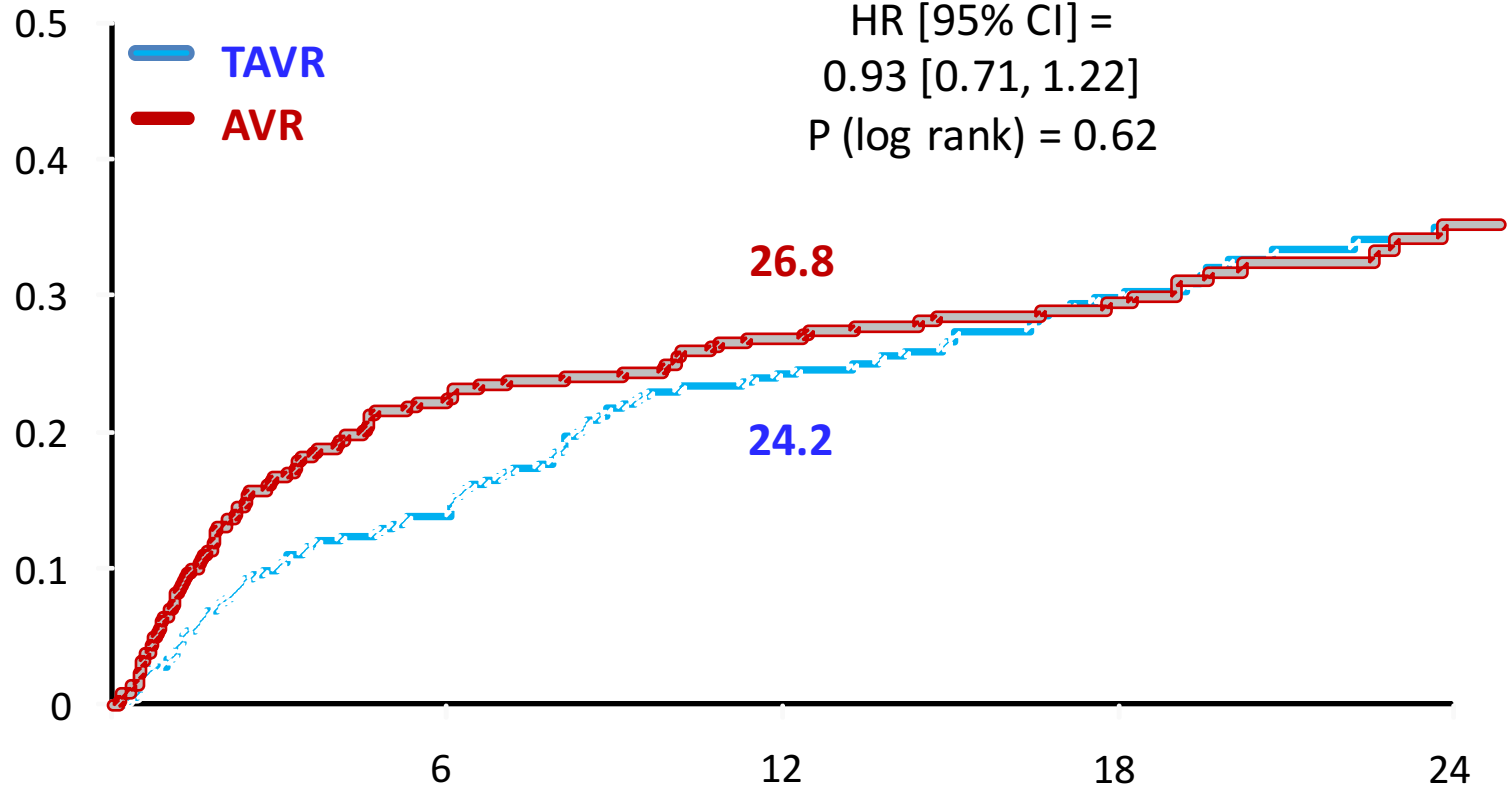
PARTNER Final Thoughts

Rarely, in Medical Research,
has so dramatic an improvement in Survival,
been achieved in such a Short Time,
with so few Iterations;
And it is only the Beginning of a Flooding Tide,
that Floats All Boats!!!

Courtesy of Lars Svensson; **Surgical PI** Cleveland Clinic and
Member of the Executive Committee, PARTNER trial



Primary Endpoint: All-Cause Mortality



No. at Risk

Months

TAVR	348	298	260	147	67
AVR	351	252	236	139	65



Risk factors for increased mortality

Table 4. Multivariate Analysis

	Hazard Ratio	95% LCL	95% UCL	P Value
Overall mortality				
Intra-procedural stroke	15.76	3.27	75.90	0.001
Pre-procedural mitral regurgitation 3+ or 4+	4.62	1.66	12.87	0.003
Systolic pulmonary artery pressure >60 mm Hg	3.21	1.19	8.71	0.02
Prior acute pulmonary edema	2.75	1.32	5.72	0.007
Diabetes mellitus	2.45	1.19	5.07	0.02
	Odds Ratio	95% LCL	95% UCL	P Value
Early mortality				
Conversion to open heart surgery	38.68	2.86	522.59	0.006
Cardiac tamponade	10.97	1.59	75.61	0.02
Major access site complications	8.47	1.67	42.82	0.01
Left ventricular ejection fraction <40%	3.51	1.62	7.62	0.002
Prior balloon aortic valvuloplasty	2.87	1.24	6.65	0.01
Diabetes mellitus	2.66	1.26	5.65	0.01
	Hazard Ratio	95% LCL	95% UCL	P Value
Late mortality				
Prior stroke	5.468	1.47	20.39	0.01
Post-procedural paravalvular leak $\geq 2+$	3.785	1.57	9.10	0.003
Prior acute pulmonary edema	2.696	1.09	6.68	0.03
Chronic kidney disease	2.532	1.01	6.35	0.048

LCL indicates lower confidence limit; UCL indicates upper confidence limit.



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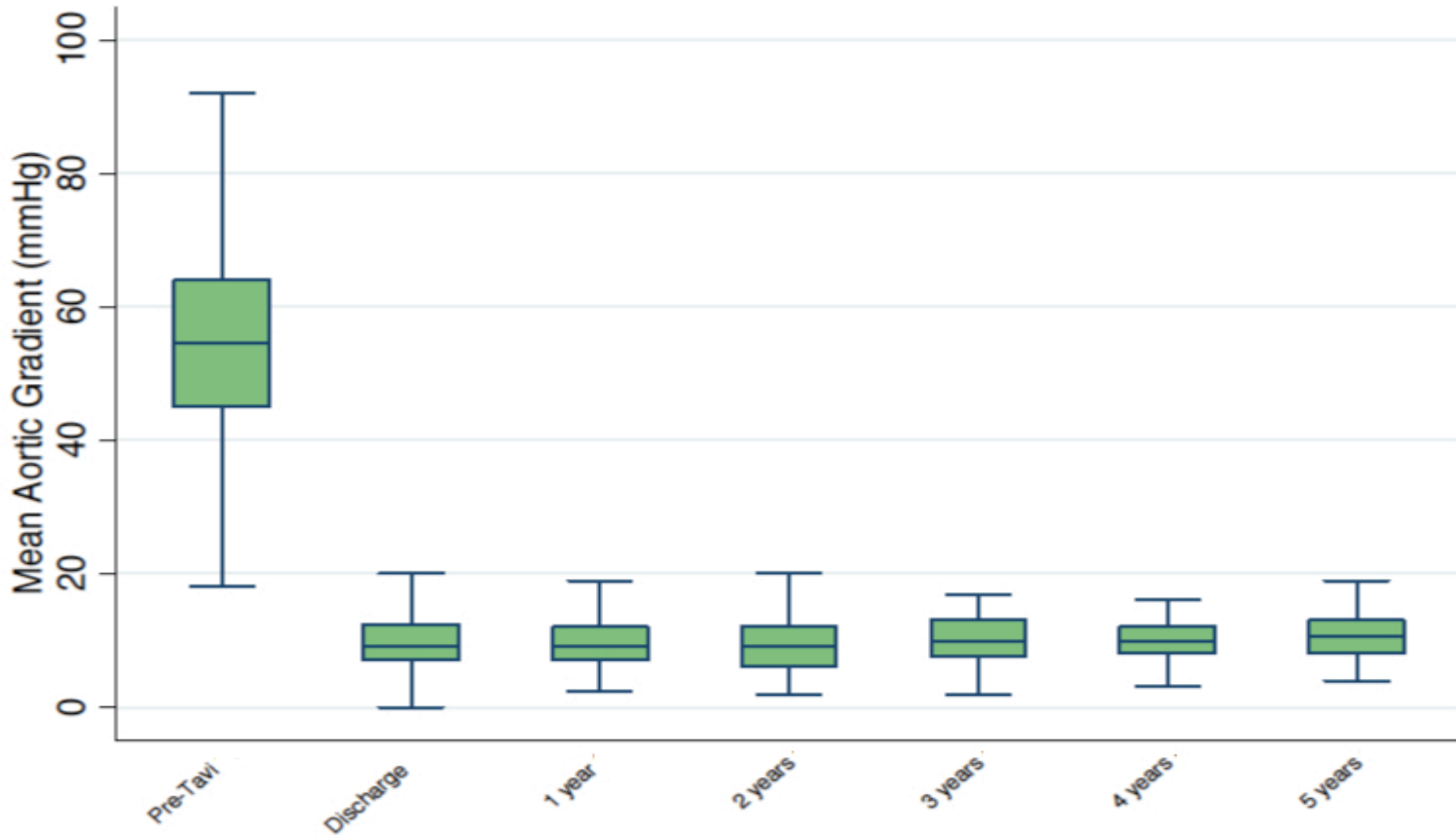
2007-2015





Durability

Corevalve italian Registry 5 years Follow up



. Time trends in transaortic mean gradient.



ECHOCARDIOGRAPHIC OUTCOMES OVER 7-YEARS FOLLOW UP

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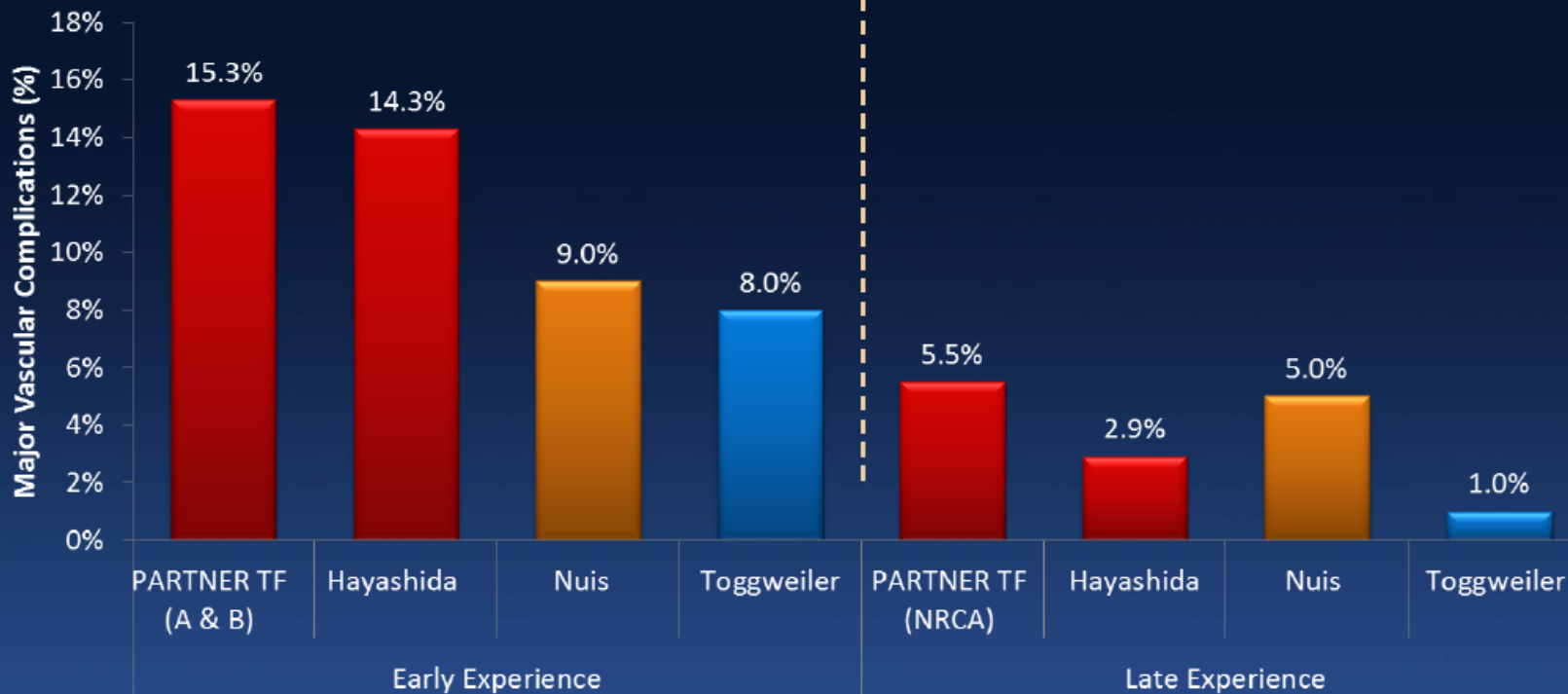




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Learning Course

Major Vascular Complications



¹Fearon, et al., presented at ACC 2013; ²Hayashida, JACC Card Int 2011; 4(8): 851-8;

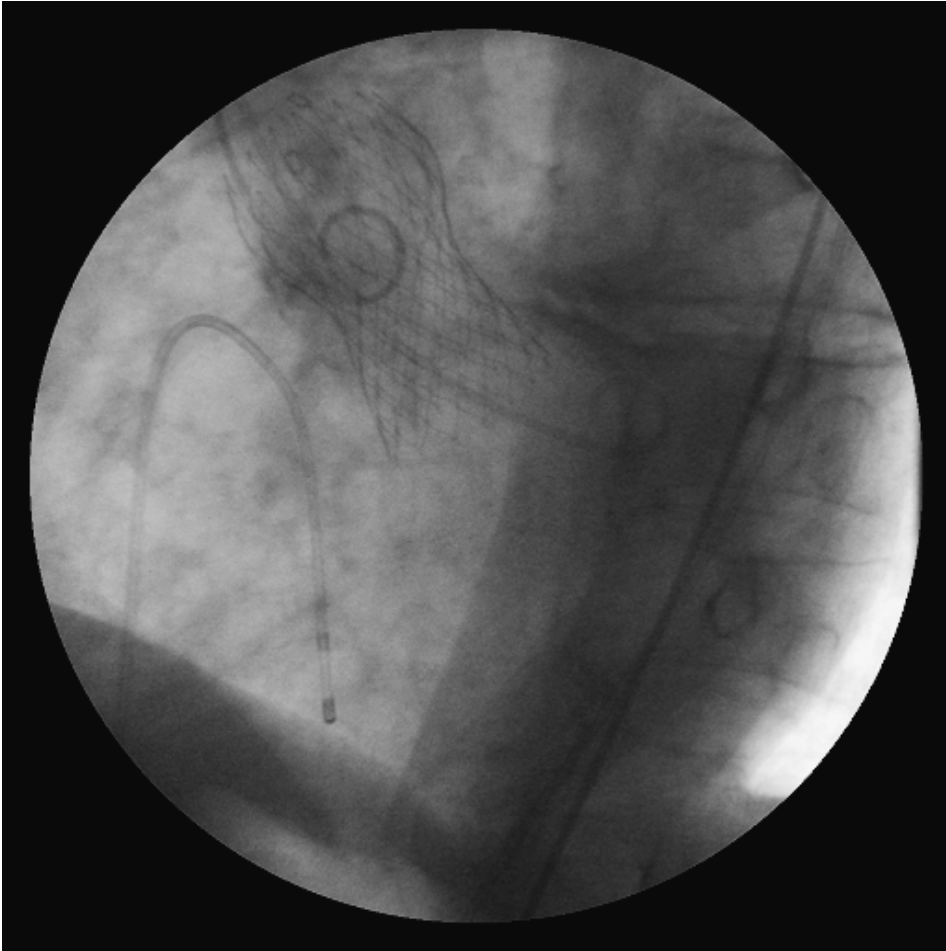
³Nuis, Am J Cardiol 2011; 107: 1824-1829; ⁴Toggweiler, JACC 2012; 59(2): 113-8





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AR paravalvular leak

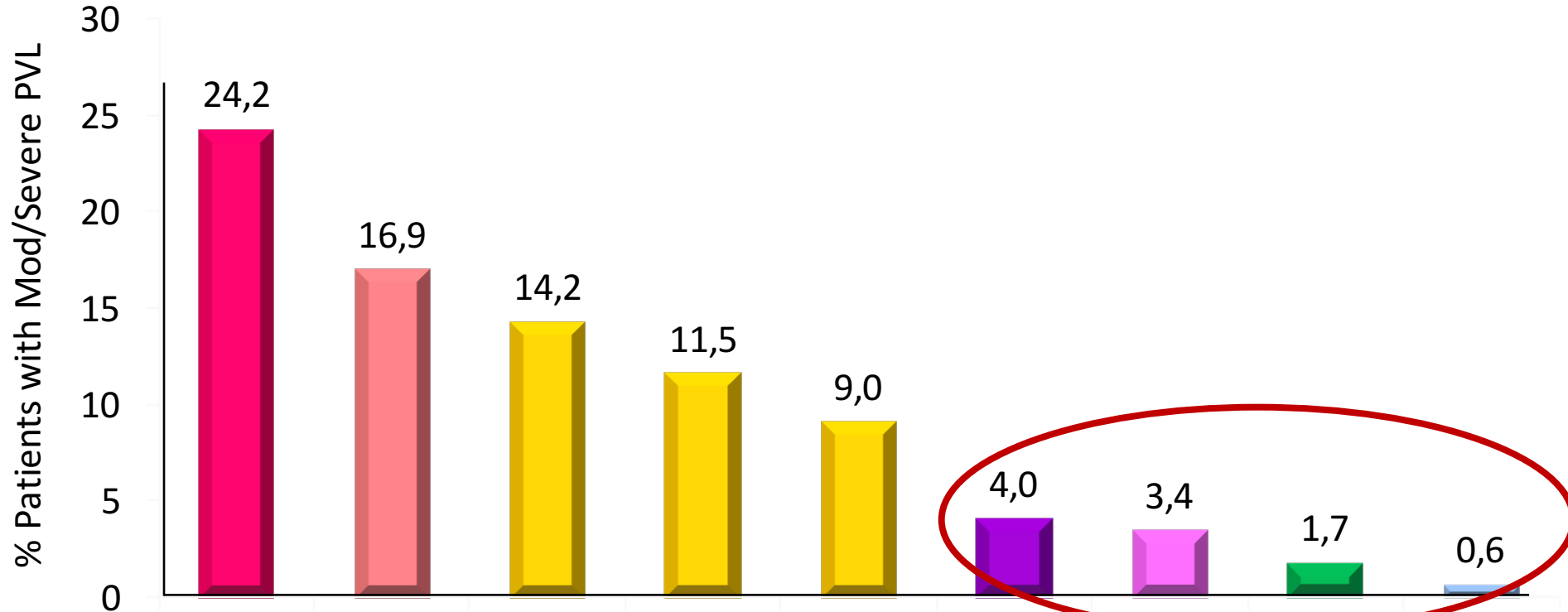




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1 Month Moderate & Severe PVL

TAVI Clinical Trials



	SAPIEN XT PARTNER II, Inop ¹	SAPIEN PARTNER II Inop ¹	CoreValve ADVANCE ²	CoreValve Extreme Risk ³	CoreValve High Risk ⁴	Portico CE Study ⁵	SAPIEN 3 ⁶	Direct Flow DISCOVER ⁷	LOTUS REPRISE II & EXT ⁸
	N=236	N=225	N=639	N=418	N=390	N=75	N=150	N=100	N=250

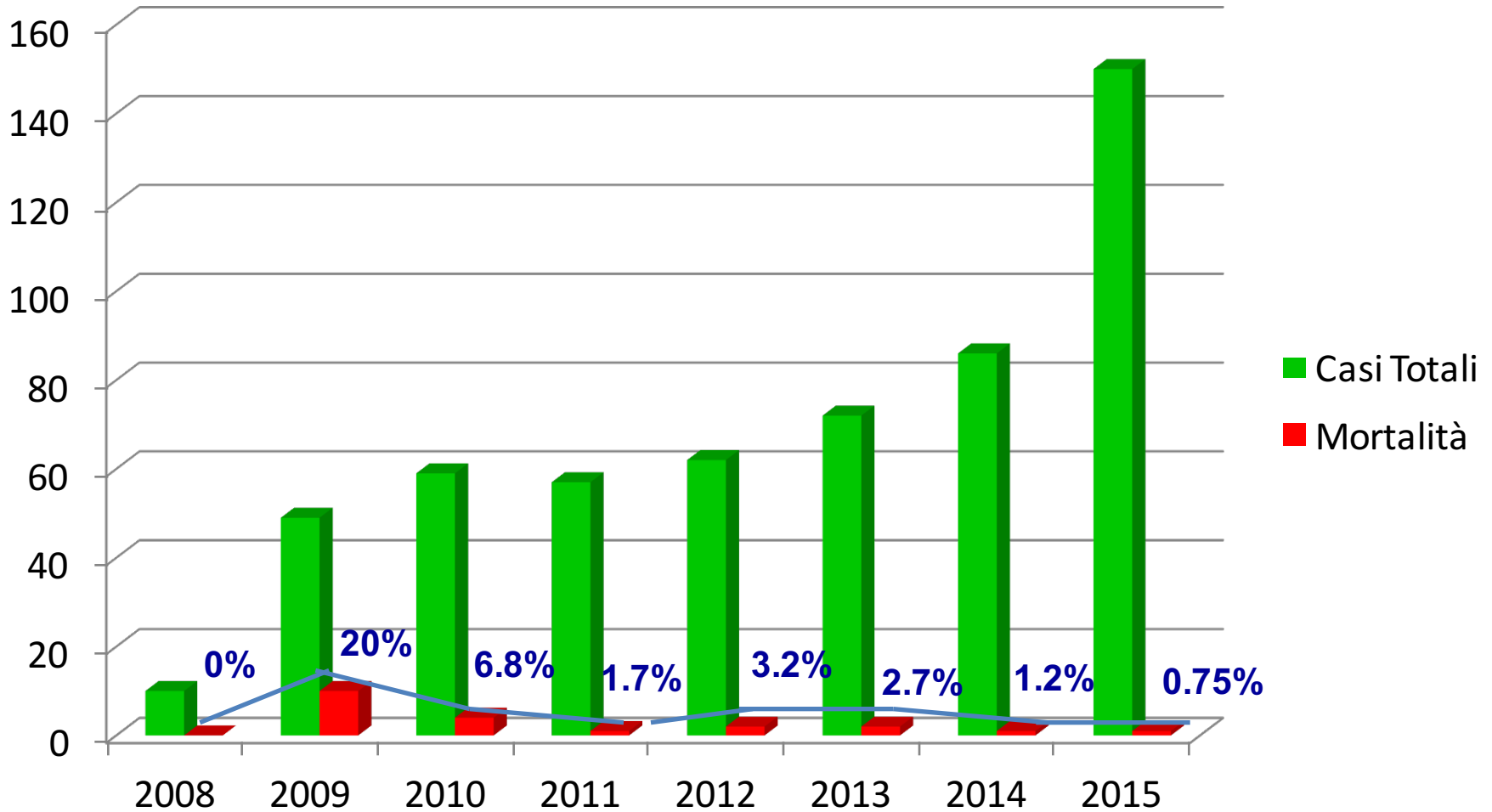
¹Leon M, ACC 2013, ²Linke A, PCR 2014. ³Popma J, JACC 2014; 63(19): 1972-81, ⁴Adams D, N Engl J Med 2014; 370: 1790-98. ⁵Manoharan, et al. TCT 2014. ⁶Webb J, EuroPCR 2014. ⁷Schofer, JACC 2013. ⁸Ian Meredith, London Valves 2014. Results from different studies not directly comparable. Information provided for educational purpose only



Learning Curve

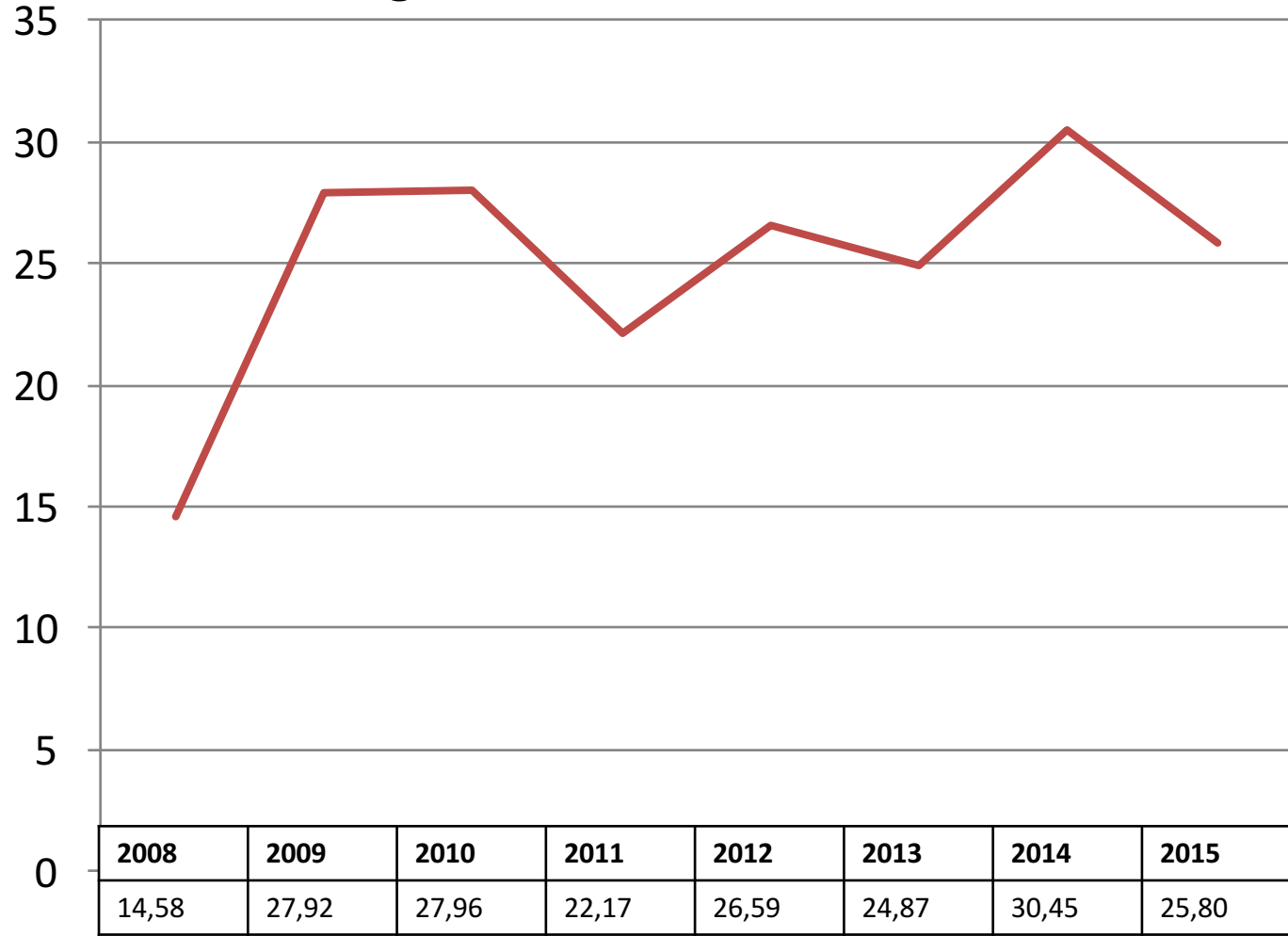
30 mortality post TAVI.

Single center experience 2008-2015 (534 pts)



Euroscore 2008- 2015

Logistic EuroSCORE



— Logistic EuroSCORE

ORIGINAL ARTICLE

Transcatheter Aortic-Valve Replacement with a Self-Expanding Prosthesis

D.H. Adams et al. for the Core Valve Clinical Investigator

29 March 2014

Corevalve US clinical trial
ACC 2015

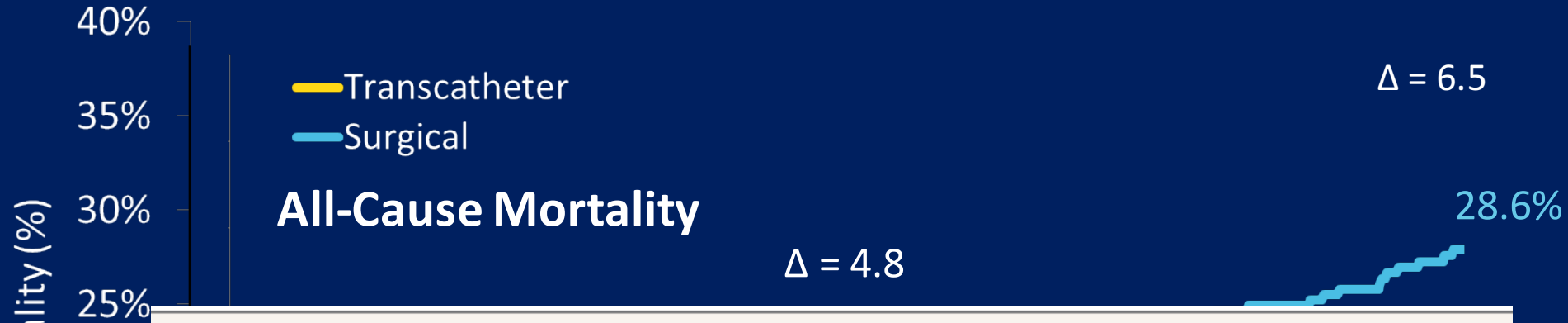
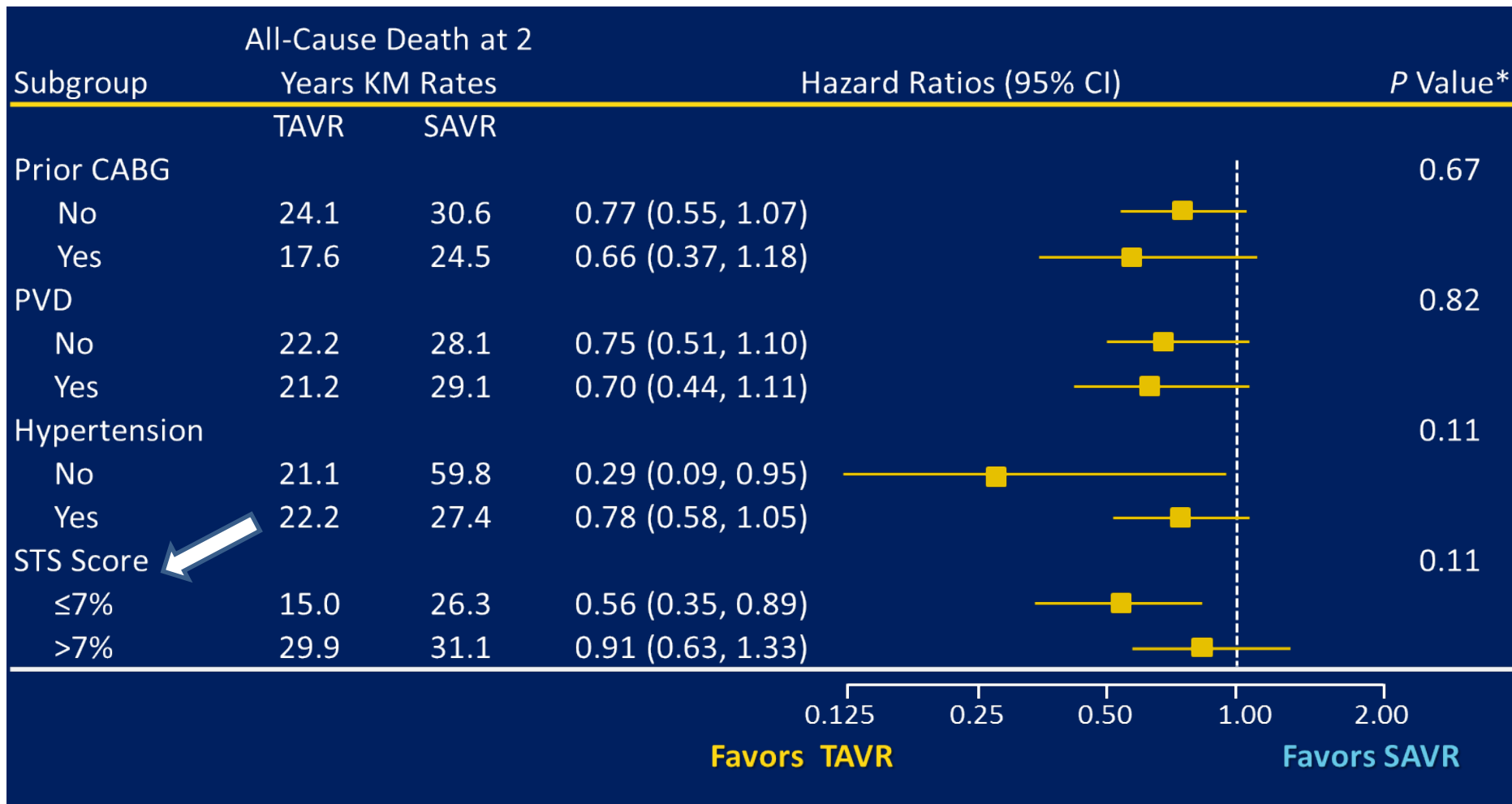


Table 1. Characteristics of the Patients at Baseline.*

Characteristic	Intention-to-Treat Population		As-Treated Population	
	TAVR Group (N=394)	Surgical Group (N=401)	TAVR Group (N=390)	Surgical Group (N=357)
Age — yr	83.2±7.1	83.5±6.3	83.1±7.1	83.2±6.4
STS PROM estimate†				
Mean estimate — %	7.3±3.0	7.5±3.2	7.3±3.0	7.5±3.4
<4% — no. (%)	33 (8.4)	42 (10.5)	33 (8.5)	40 (11.2)
4–10% — no. (%)	308 (78.2)	288 (71.8)	304 (77.9)	251 (70.3)
>10% — no. (%)	53 (13.5)	71 (17.7)	53 (13.6)	66 (18.5)

Subgroup Analysis for 2-Year Mortality





Studio OBSERVANT

Total	SAVR	TAVI
7799	5864	1935

EuroSCORE classes	SAVR N	TAVI N	Totale N
< 5%	2,634	166	2,800
5% - 10%	1,182	549	1,731
10% - 15%	375	323	698
15% - 20%	140	164	304
> 20%	187	292	479

1/3 di tutte le TAVI

Propensity match 859 SAVR vs 859 TAVI

EuroSCORE classes	SAVR	TAVI	p_value
< 5%	1.0%	4.2%	0.001
5% - 10%	2.7%	3.6%	0.285
10% - 15%	4.0%	5.6%	0.451
15% - 20%	7.9%	6.7%	0.154
> 20%	9.1%	12.7%	0.443

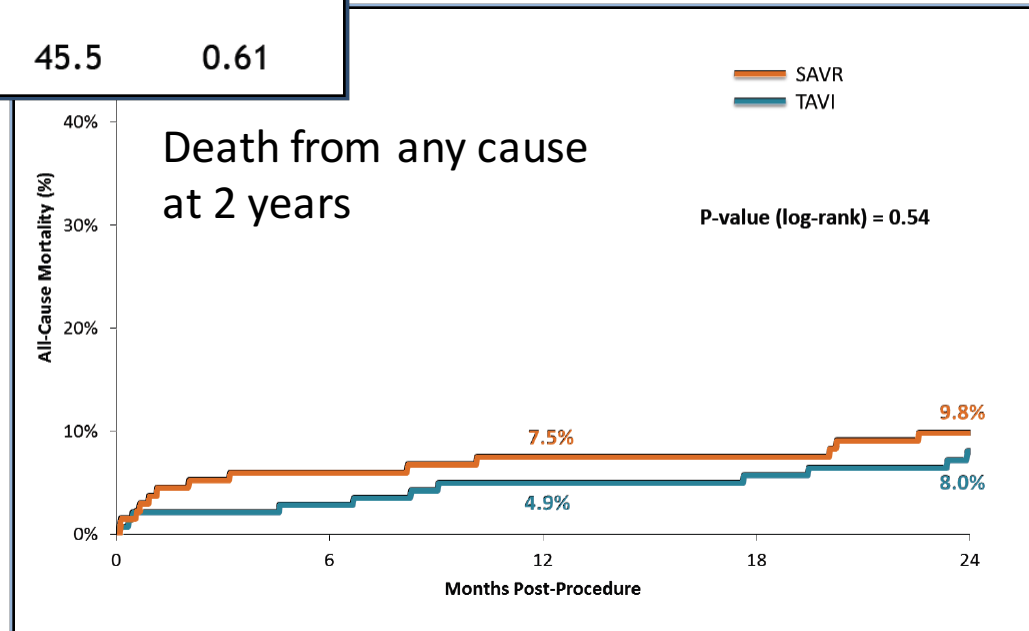
Final results
30 days Mortality



THE NOTION TRIAL

An All-Comers Randomized Clinical Trial comparing Transcatheter with Surgical Aortic Valve Replacement in Pts with Aortic Valve Stenosis

Characteristic, % or mean \pm SD	TAVI n=145	SAVR n=135	p-value
Age (yrs)	79.2 \pm 4.9	79.0 \pm 4.7	0.71
Male	53.8	52.6	0.84
STS Score	2.9 \pm 1.6	3.1 \pm 1.7	0.30
STS Score < 4%	83.4	80.0	0.46
Logistic EuroSCORE I	8.4 \pm 4.0	8.9 \pm 5.5	0.38
NYHA class III or IV	48.6	45.5	0.61





Ongoing Randomised Trial

Partner 2

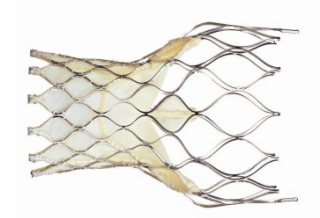
- USA
- TAVR vs Surgery
- Double blind Randomisation 1:1
- **Mid-low risk patients**
- 1 year mortality
- Edwards Sapien 3

Surtavi

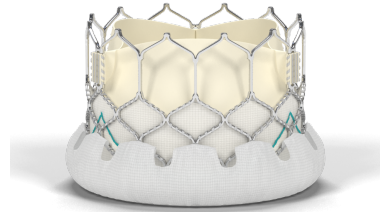
- Europe
- TAVR vs Surgery
- Double blind Randomisation 1:1
- **Mid-low risk patients**
- 1 year mortality
- Medtronic Corevalve

New Transfemoral Valves

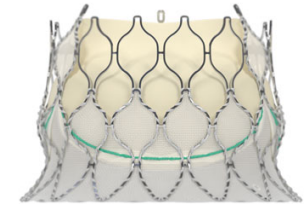
Medtronic Evolut



Edwards Sapien 3



Centera



Direct Flow



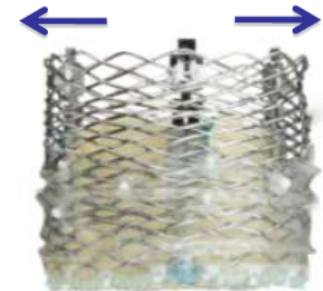
St Jude Portico



Simetys



Boston Lotus



Futuro della TAVI

“Tailored approach”



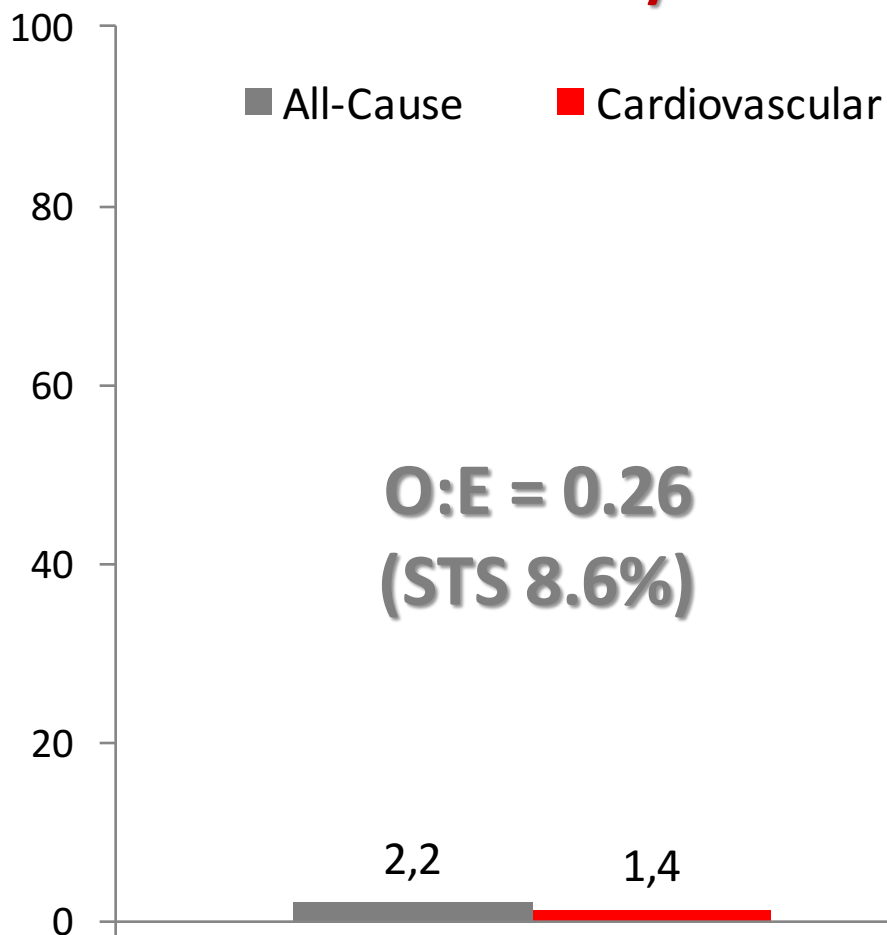
Overview clinical trials on new valves

	CoreValve (US Pivotal Extreme Risk) 34	Sapien (PARTNER) 30	SapienXT 21 (PARTNER II) 31	Sapien 3 61	Direct Flow 62	Lotus 63	Portico 64	Evolu R 65	Symetis 66
Death	7.9%	5.0%	3.5%	2.1%	1.3%	4.4%	2.9%	0%	3.4%
Stroke (Disabling)	2.4%	5.0%	3.2%	1.8%	4.0%	1.7%	2.9%	0%	2.8%
New Pacemaker	22.2%	3.4%	6.4%	12.5%	17.0%	28.6%	9.8%	11.7%	9.0%
MI	1.3%	0.0%	1.8%	2.1%	1.3%	3.3%	2.0%	0%	1.2%
Major Vascular Complications	8.3%	16.2%	9.6%	4.2%	2.7%	2.5%	3.9%	8.3%	4.8%
Disabling Bleeding	11.7%	16.8%	7.8%	2.1%	2.7%	5.0%	3.9%	-	5.3%
Mean Gradient	8.5 mmHg	11mmHg	10 mmHg	10.7 mmHg	12.5 mmHg	11.5 mmHg	8.7 mmHg	8.5 mmHg	10 mmHg
PVL (Mod/Severe)	11.5%	11.8%	24.2%	3.5%	2.0%	1.0%	3.0%	3.4%	2.5%

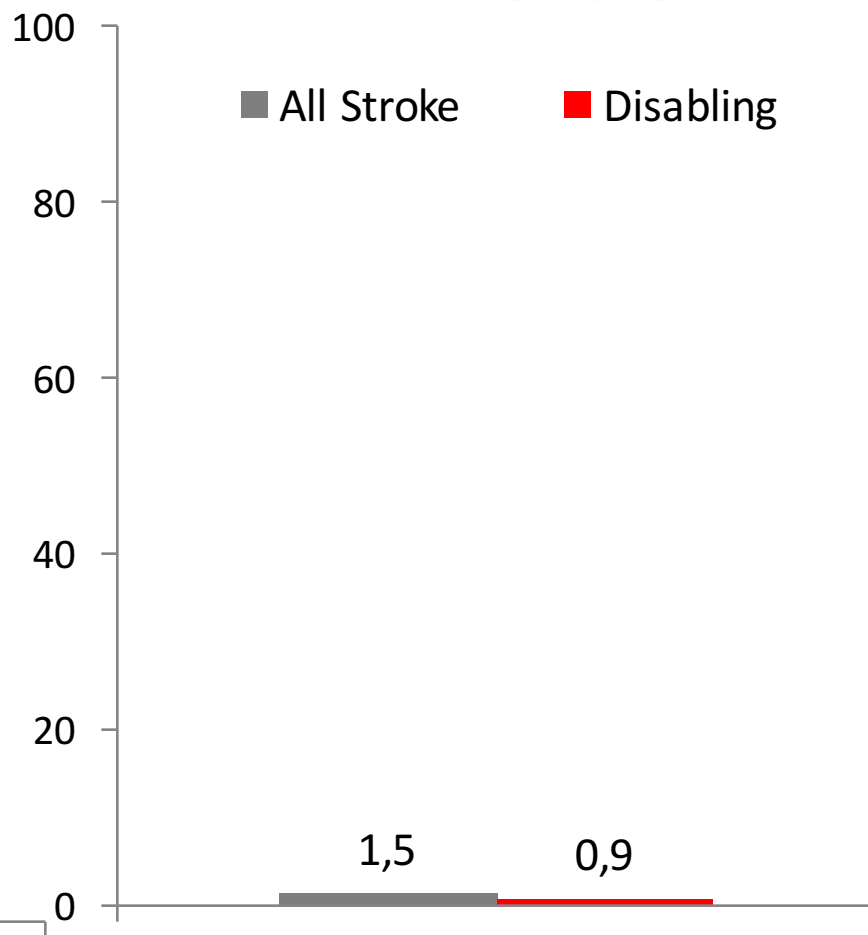
Mortality and Stroke: S3HR

At 30 Days (As Treated Patients)

Mortality



Stroke



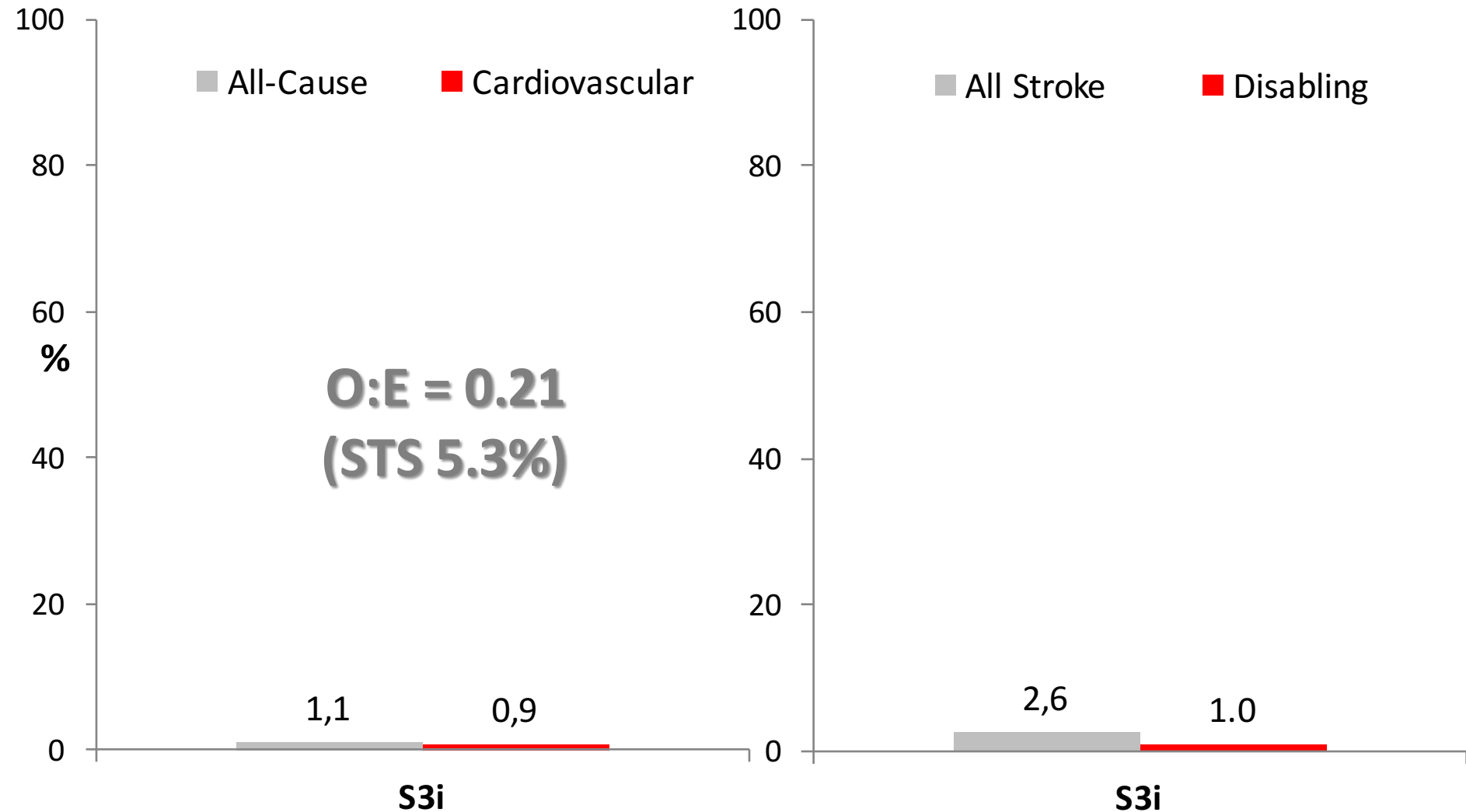


Mortality and Stroke: S3i

At 30 Days (As Treated Patients)

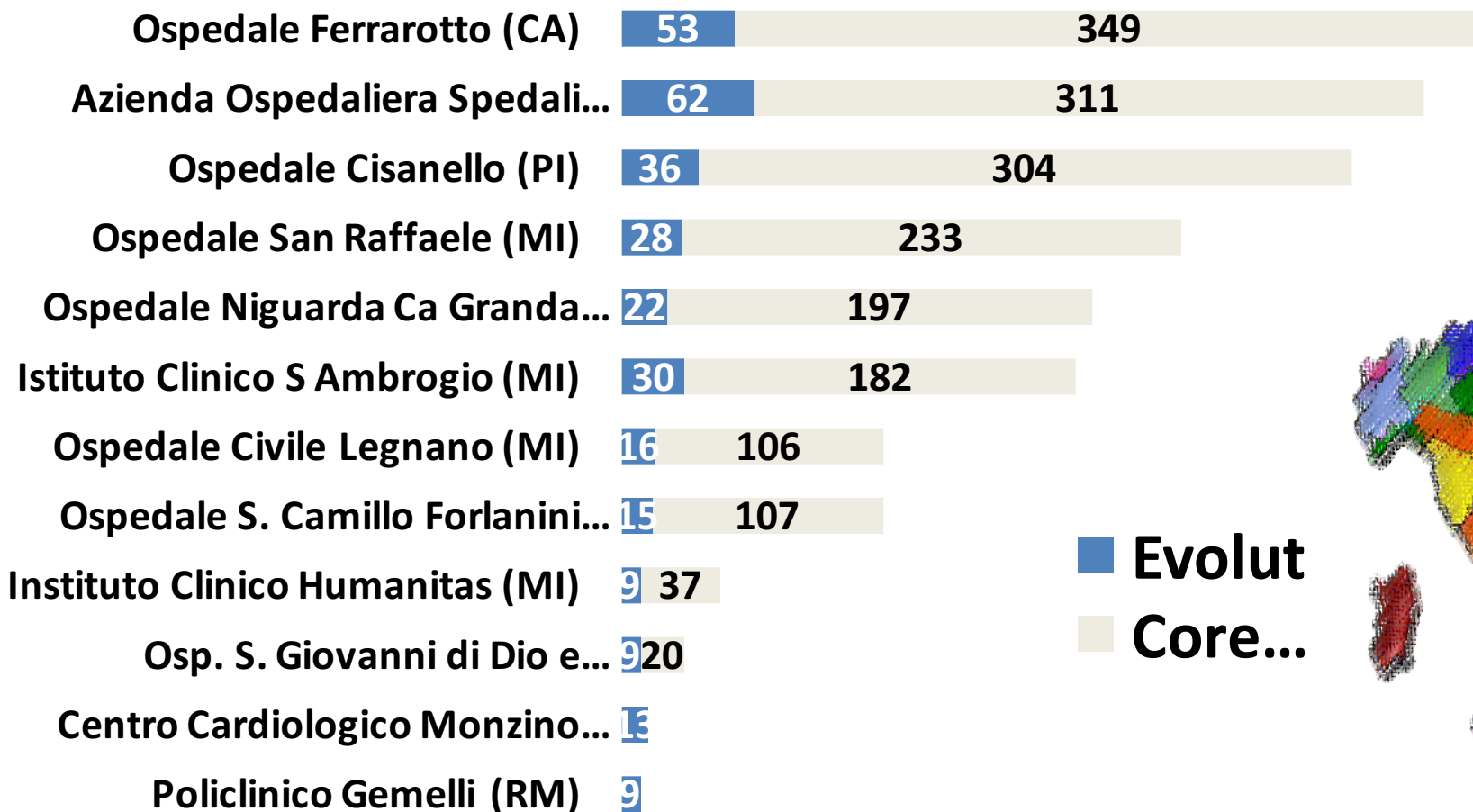
Mortality

Stroke



1846 CoreValve (from JUL 2007)
302 Evolut (from Nov 2014)

2148 pazienti inclusi

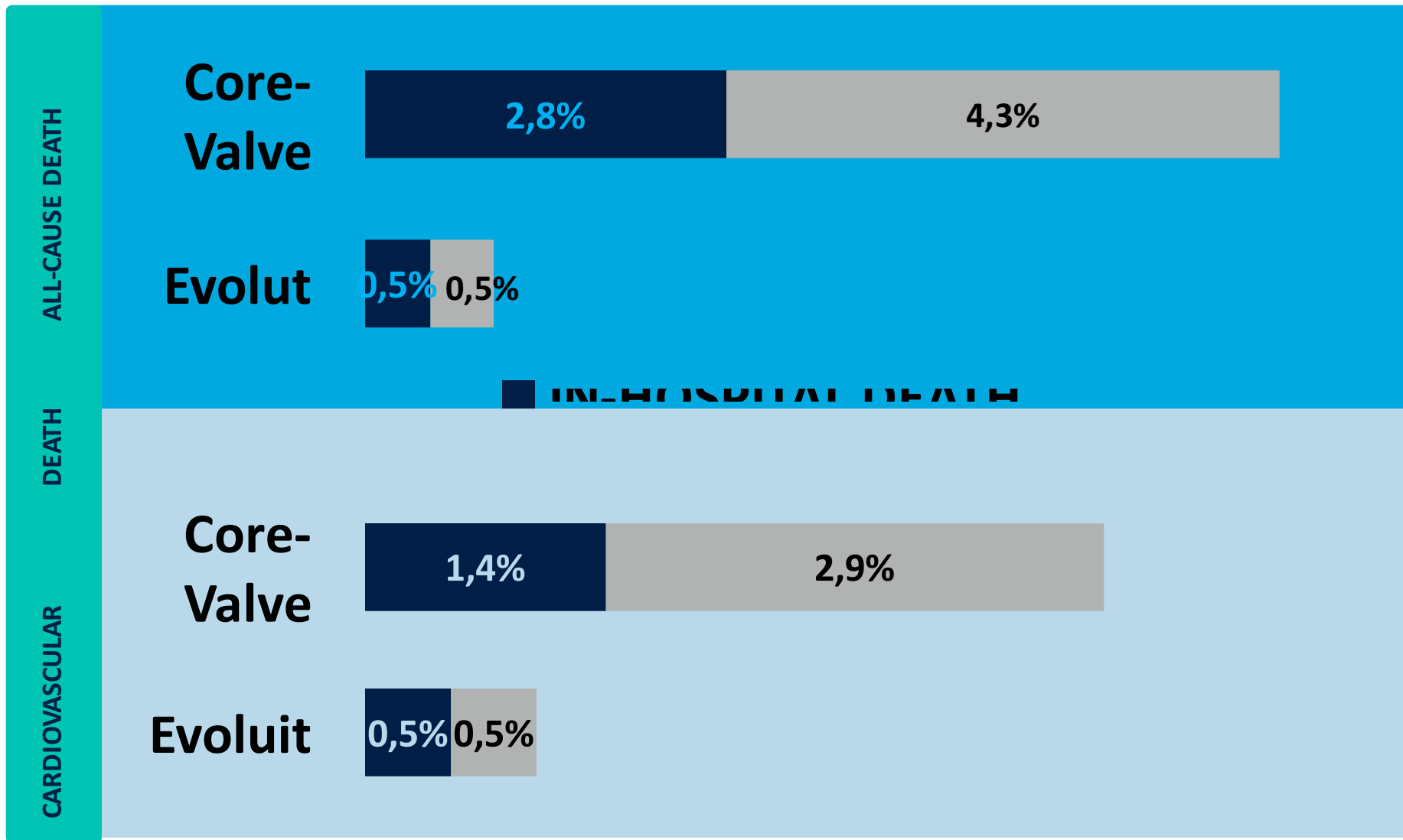


■ Evolut
■ Core...



PATIENT CHARACTERISTICS	SUMMARY STATISTICS	CORE-VALVE (N=1846)	EVOLUT (N=302)	P-VALUE
AGE AT PROCEDURE (YEARS)	MEAN ± SD	82 ± 6	82 ± 7	0.904
MALE	%	41.5%	35.1%	0.034
LOG EUROSCORE	MEDIAN (IQR)	19 (12- 29)	19 (11- 27)	0.364
STS SCORE	MEDIAN (IQR)	6.0 (3.9- 10.1)	5.7 (3.5- 9.7)	0.206
CREATININE>2 MG/DL	%	9.4%	7.7%	0.354
GFR<30	%	21.9%	26.7%	0.074
NYHA III-IV	%	74.1%	68.2%	0.032
KIDNEY DISEASE	%	48.7%	50.4%	0.606
HYPERTENSION	%	81.8%	88.3%	0.006
PRIOR ISCHEMIC EVENT	%	10.0%	11.3%	0.510
HISTORY OF CHRONIC FA	%	4.1%	8.9%	<0.001
CAD	%	42.6%	40.4%	0.473
PRIOR MI	%	17.7%	14.4%	0.165
PVD	%	25.7%	17.5%	0.002
COPD	%	22.3%	14.9%	0.004 ⁴²

discharge and 30-days COMPLICATIONS propensity analysis)

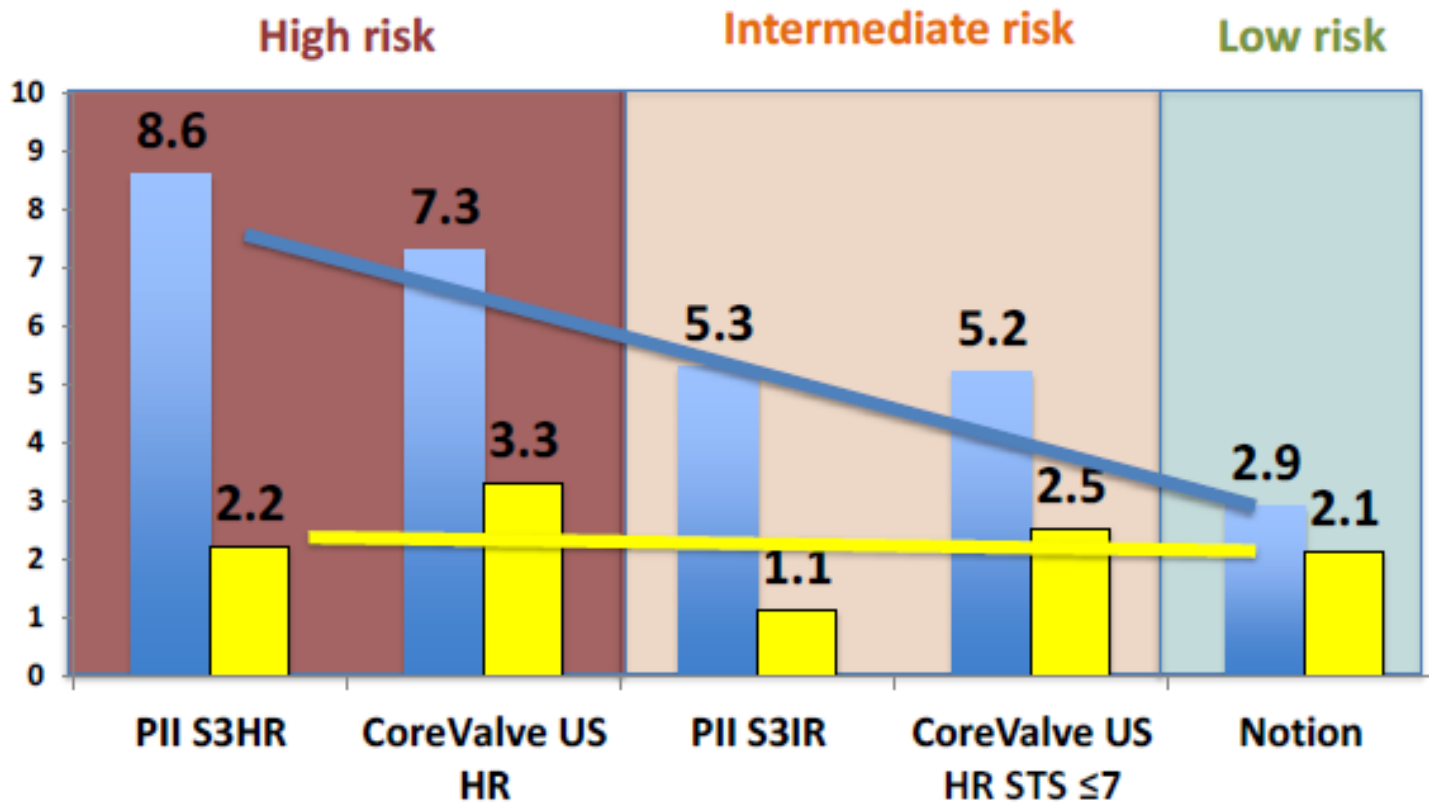


Risultati SVA > 80 a

	anno	Periodo di arruolamento	n	% mortalità operatoria	%Mortalità a 1 anno
Gelhot 5	1996	1971-1992	322	13.7	21.4
Asimakopulos 6	1997	1980-1995	1100	6.6	-
Craver. 7	1988	1976-1994	144	5.7	-
Sundt 8	2000	1993-1998	133	11.1	18
Chiappini 9	2004	1999-2003	115	8.5	
Langanay 10	2006	1978-2003	771	11.1	19
Roberts 11	2007	1993-2005	196	10.3	-
Bakaeem 12	2010	1996-2007	504	5.6	-
Bhadipati 13	2011	2003-2008	352	6.5	14
D'Eusanio 14	2011	2003-2007	430	3.7	9
Leontyev 15	2009	1996-2006	282	10.6	19
Krane et al 16	2011	1987-2006	303	7.9	16
Likosky et 17	2009	1987-2006	575	8.0	16
Saxena 18	2011	2001-2009	541	4.0	10

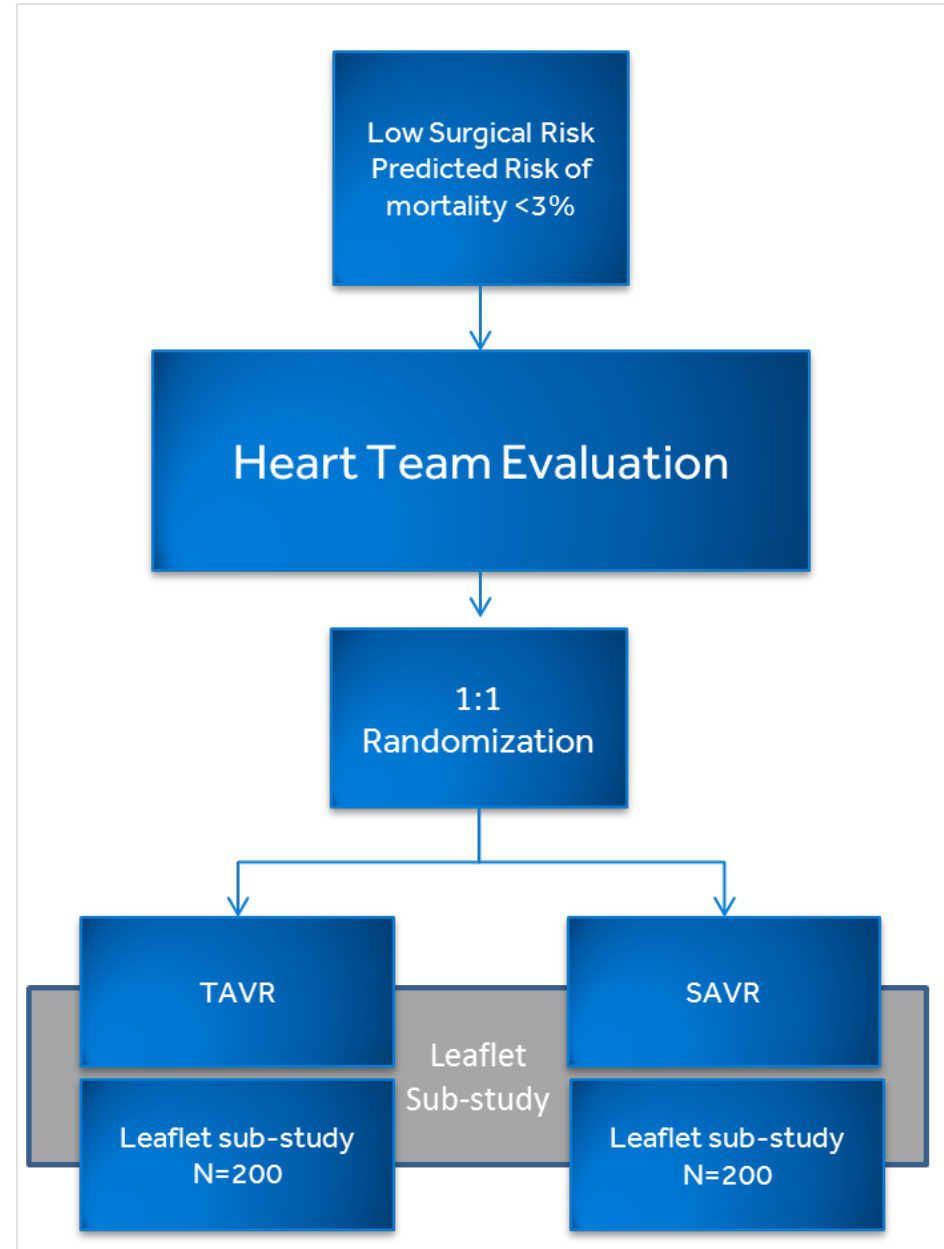
TAVI

- Predicted mortality at 30 days according to STS score
- Observed mortality at 30 days



The U.S. Food and Drug Administration (FDA) approved an expanded indication trial for the CoreValve® Evolut® R System. Patients with aortic stenosis, who are at a low surgical mortality risk as determined by a heart team, will be enrolled in the trial.

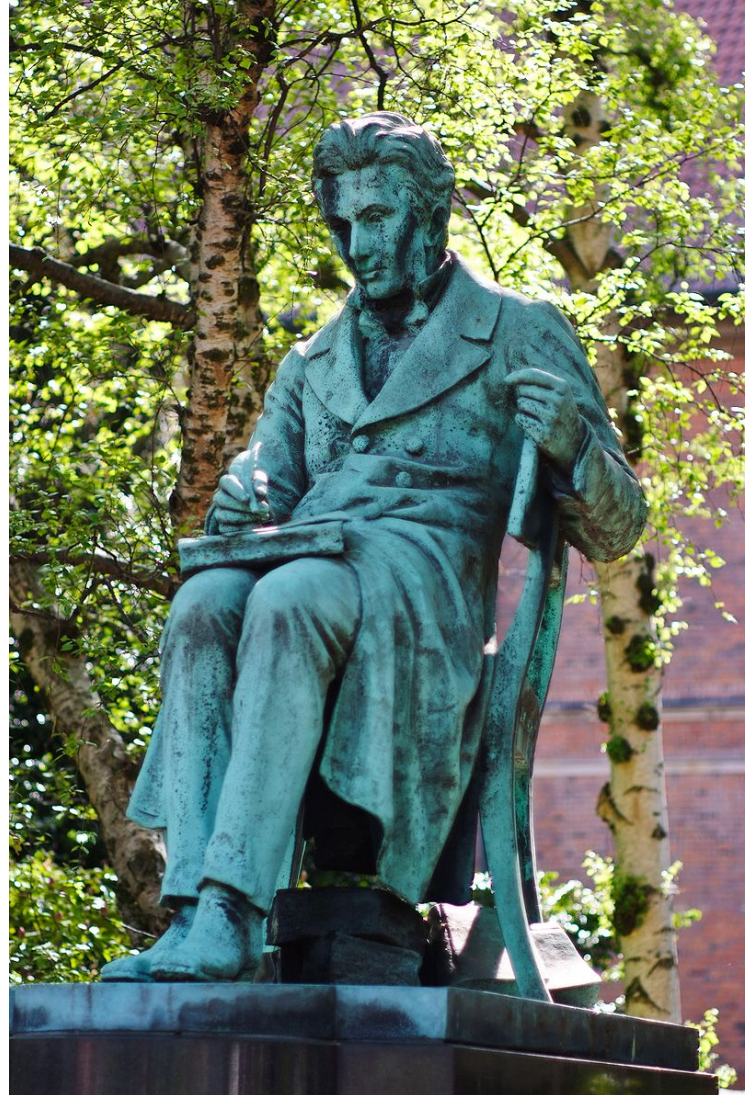
- Low risk & leaflet Sub-study
- **Patient Population: Low Risk Cohort**
 - Determined by Heart Team to be low surgical risk
- **Primary Endpoint:**
 - Safety: Death, all stroke, life-threatening bleeding, major vascular complications, or AKI at 30 days
 - Efficacy: Death or major stroke at 2 years
- **Sample Size: ~1200 Subjects**
- **Follow-up Evaluations:**
 - 30-days, 6-month, and 1 Through 5 years
- **Number of Sites: Up to 80 sites**



Conclusioni

*“Il presente va giudicato
guardando il passato ma
va vissuto guardando il
futuro”*

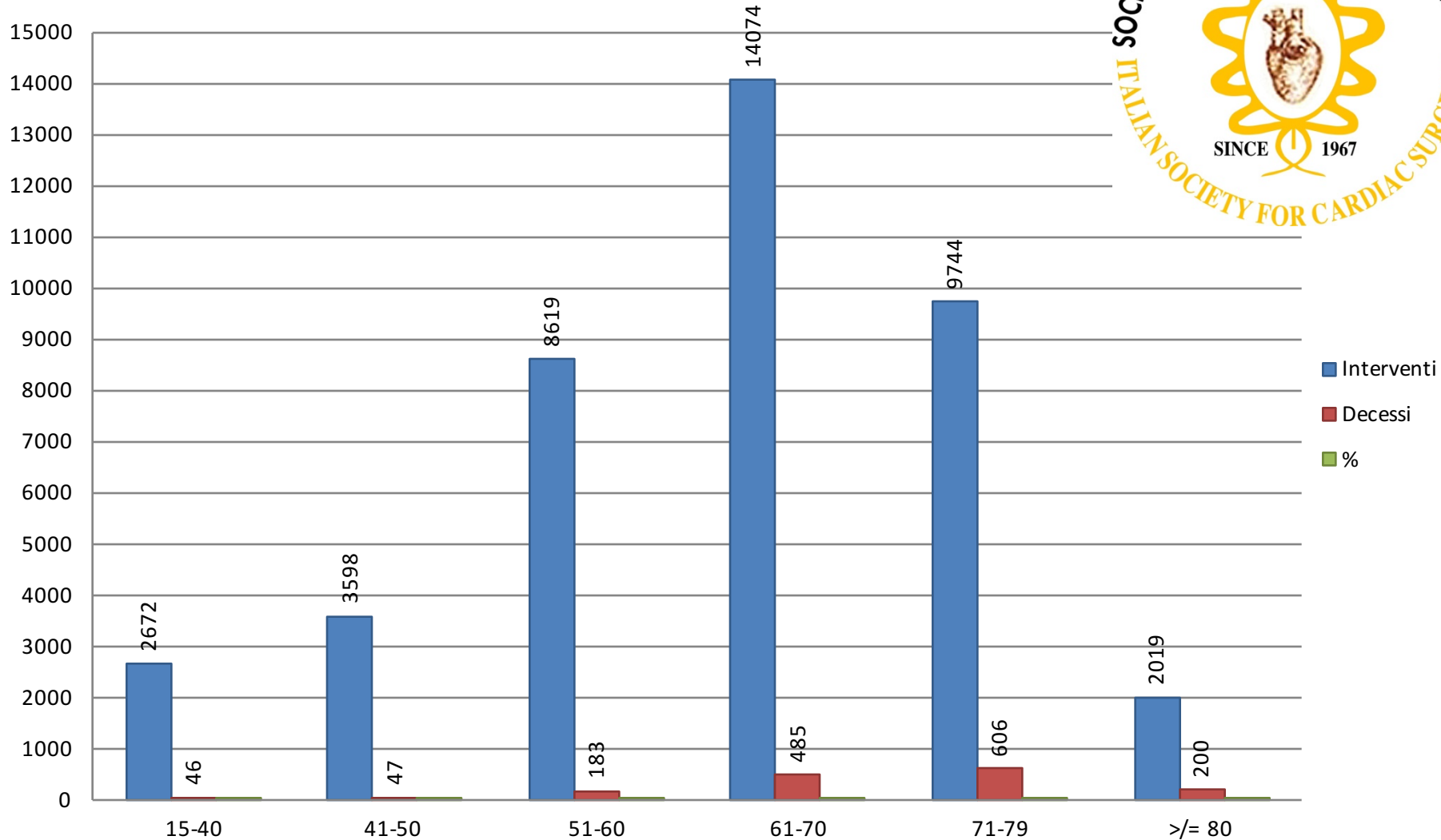
Soren Kirkegaard





“ *Non mi preoccupo mai del futuro, arriva
sempre abbastanza presto* ”

ALBERT EINSTEIN



Mort.

1.7%

1.3%

2.1%

3.4%

6.2%

10%