63° CONGRESSO NAZIONALE SIGG

GLI ANZIANI: LE RADICI DA PRESERVARE

ROMA 28 novembre 01 dicembre 2018 Auditorium della Tecnica, Roma

La TAVI nell'anziano: a che punto siamo?

Niccolò Marchionni

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Direttore Dipartimento Cardiotoracovascolare
Azienda Ospedaliero-Universitaria Careggi

AHA STATISTICAL UPDATE

Heart Disease and Stroke Statistics—2017 Update

A Report From the American Heart Association

Aortic stenosis: a geriatric disease!

Table 22-1. Pooled Prevalence of Valvular Heart Dise

	Age, y						...equency Adjusted to 2000 US Adult Population
	18–44	45–54	55–64	65–74	≥75	Trend	
Participants, n	4351	696	1240	3879	1745	...	209 128 094
Male	1959 (45)	258 (37)	415 (33)	1586 (41)	826 (47)	...	100 994 367 (48)
Mitral regurgitation (n=449)	23 (0.5)	1 (0.1)	12 (1.0)	250 (6.4)	163 (9.3)	<0.0001	1.7% (95% CI, 1.5%–1.9%)
Mitral stenosis (n=15)	0 (0)	1 (0.1)	3 (0.2)	7 (0.2)	4 (0.2)	0.006	0.1% (95% CI, 0.02%–0.2%)
Aortic regurgitation (n=90)	10 (0.2)	1 (0.1)	8 (0.7)	37 (1.0)	34 (2.0)	<0.0001	0.5% (95% CI, 0.3%–0.6%)
Aortic stenosis (n=102)	1 (0.02)	1 (0.1)	2 (0.2)	50 (1.3)	48 (2.8)	<0.0001	0.4% (95% CI, 0.3%–0.5%)
Any valve disease	...	...	...	...	...	...	...
Overall (n=615)	31 (0.7)	3 (0.4)	23 (1.9)	328 (8.5)	230 (13.2)	<0.0001	2.5% (95% CI, 2.2%–2.7%)
Female (n=356)	19 (0.8)	1 (0.2)	13 (1.6)	208 (9.1)	115 (12.6)	<0.0001	2.4% (95% CI, 2.1%–2.8%)
Male (n=259)	12 (0.6)	2 (0.8)	10 (2.4)	120 (7.6)	115 (14.0)	<0.0001	2.5% (95% CI, 2.1%–2.9%)

Values are n (%) unless otherwise indicated. ARIC indicates Atherosclerosis Risk in Communities study; CARDIA, Coronary Artery Risk Development in Young Adults; CHS, Cardiovascular Health Study; CI, confidence interval; and ellipses (...), not applicable.

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Benjamin EJ et al. Circulation. 2017;135:e146-e603

TAVI History: from Big Bang to RCTs Landmarks

2016

Publication of the PARTNER-2 (Cohort A) Trial 2016

FDA expands indication for Sapien XT/3 THV for intermediate risk patients 8/2016

2010

Publication of the PARTNER-1 (Cohort A) Trial 2010

2011

Publication of the PARTNER-1 (Cohort B) Trial 2011

FDA expands indication for Sapien 3 in aortic and mitral VIV 6/2017

Publication of the SURTAVI Trial 2017

First-in-man TAVI performed by Dr. Alain Cribier 2002

FDA approves Sapien THV for inoperable patients 11/2011 and high risk patients 6/2012

FDA expands indication for CoreValve, Evolut R/Pro for intermediate risk patients 7/2017

Publication of the US Pivotal Trial (Extreme and High Surgical Risk Cohorts) 2014

FDA approves CoreValve THV for extreme risk patients 1/2014 and high risk patients 6/2014

2002

FDA = ement Of Aortic Transcatheter Valves trial; TAVI = transcatheter aortic valve implantation; TAVR = transcatheter aortic valve replacement; THV =

TAVI RCTs by patients' risk

TAVI patients: a <u>geriatric</u> population!

Leon MB, et al. for the PARTNER Trial Investigators

010 – **Inoperable** patients (STS 1.2%; **mean age 83.1 yrs.**). TAVI superior to OMT at 1 year: death from any cause

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JUNE 9, 2011 VOL. 364 NO. 23

Transcatheter versus Surgical Aortic-Valve Replacement in High-Risk Patients

Smith CR, et al. for the PARTNER Trial Investigators

- **2011** – **High-Risk** patients (STS 11.8%; **mean age 83.6 yrs**). TAVI non-inferior to SAVR at 1-year: death or disabling stroke (with some marginal advantage of TAVI)

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 APRIL 28, 2016 VOL. 374 NO. 17

Transcatheter or Surgical Aortic-Valve Replacement in Intermediate-Risk Patients

Leon MB, et al. for the PARTNER 2 Investigators

- **2016** – **Intermediate-Risk** patients (STS 5.8%; **mean age 81.5 yrs**). TAVI non-inferior to SVAR: 1-year death or disabling stroke

Transcatheter vs surgical aortic-valve replacement in low- to intermediate-surgical-risk candidates: A meta-analysis and systematic review

Safi U. Khan[1] | Ahmad N. Lone[1] | Muhammad A. Saleem[2] | Edo Kaluski[1,3,4]

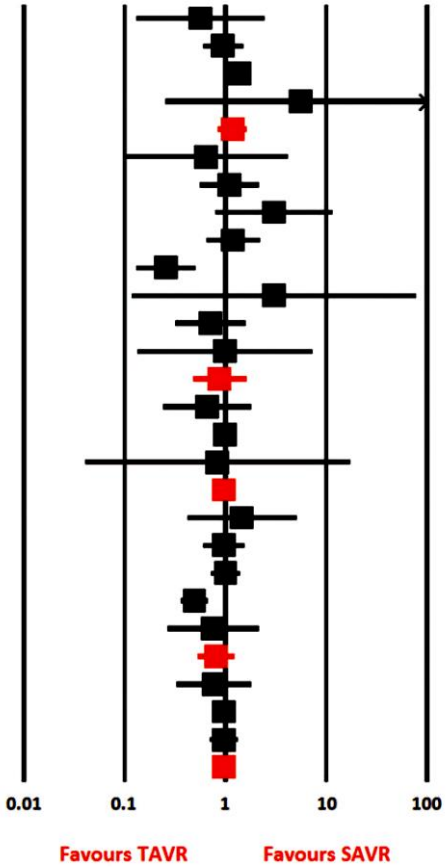
Clinical Cardiology. 2017;1–8.

9851 subjects; mean age of populations: 78-83 years

All-cause mortality

Time point	Subgroup within study	Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Short term	RCT	NOTION	0.57	0.13	2.45	-0.75	0.45
		PARTNER 2 A	0.96	0.61	1.50	-0.18	0.85
		SURTAVI	1.38	1.08	1.76	2.56	0.01
		STACCATO	5.62	0.26	121.40	1.10	0.27
			1.19	0.86	1.64	1.05	0.30
	Matched studies	Osnabrugge et al	0.65	0.10	4.10	-0.46	0.65
		Piazza et al	1.12	0.58	2.17	0.34	0.74
		Schymik et al	3.09	0.82	11.60	1.67	0.09
		Tamburino et al	1.21	0.66	2.21	0.61	0.54
		Thourani et al	0.26	0.13	0.50	-4.03	0.00
		Muneretto et al	3.06	0.12	76.64	0.68	0.50
		Fraccaro et al	0.73	0.33	1.60	-0.79	0.43
		Latib et al	1.00	0.14	7.23	0.00	1.00
			0.89	0.49	1.60	-0.40	0.69
Mid-term	RCT	NOTION	0.66	0.24	1.80	-0.81	0.42
		PARTNER 2 A	1.00	0.77	1.31	0.01	0.99
		SURTAVI	0.85	0.04	17.36	-0.11	0.91
			0.97	0.75	1.26	-0.20	0.84
	Matched studies	Osnabrugge et al	1.48	0.43	5.10	0.62	0.53
		Piazza et al	0.97	0.61	1.55	-0.12	0.91
		Tamburino et al	1.01	0.73	1.41	0.08	0.93
		Thourani et al	0.50	0.37	0.67	-4.55	0.00
		Latib et al	0.76	0.27	2.13	-0.52	0.60
			0.82	0.54	1.23	-0.96	0.33
Long term	RCT	NOTION	0.78	0.34	1.81	-0.57	0.57
		PARTNER 2 A	0.98	0.78	1.24	-0.14	0.89
		SURTAVI	0.98	0.73	1.33	-0.13	0.90
			0.97	0.81	1.16	-0.31	0.76

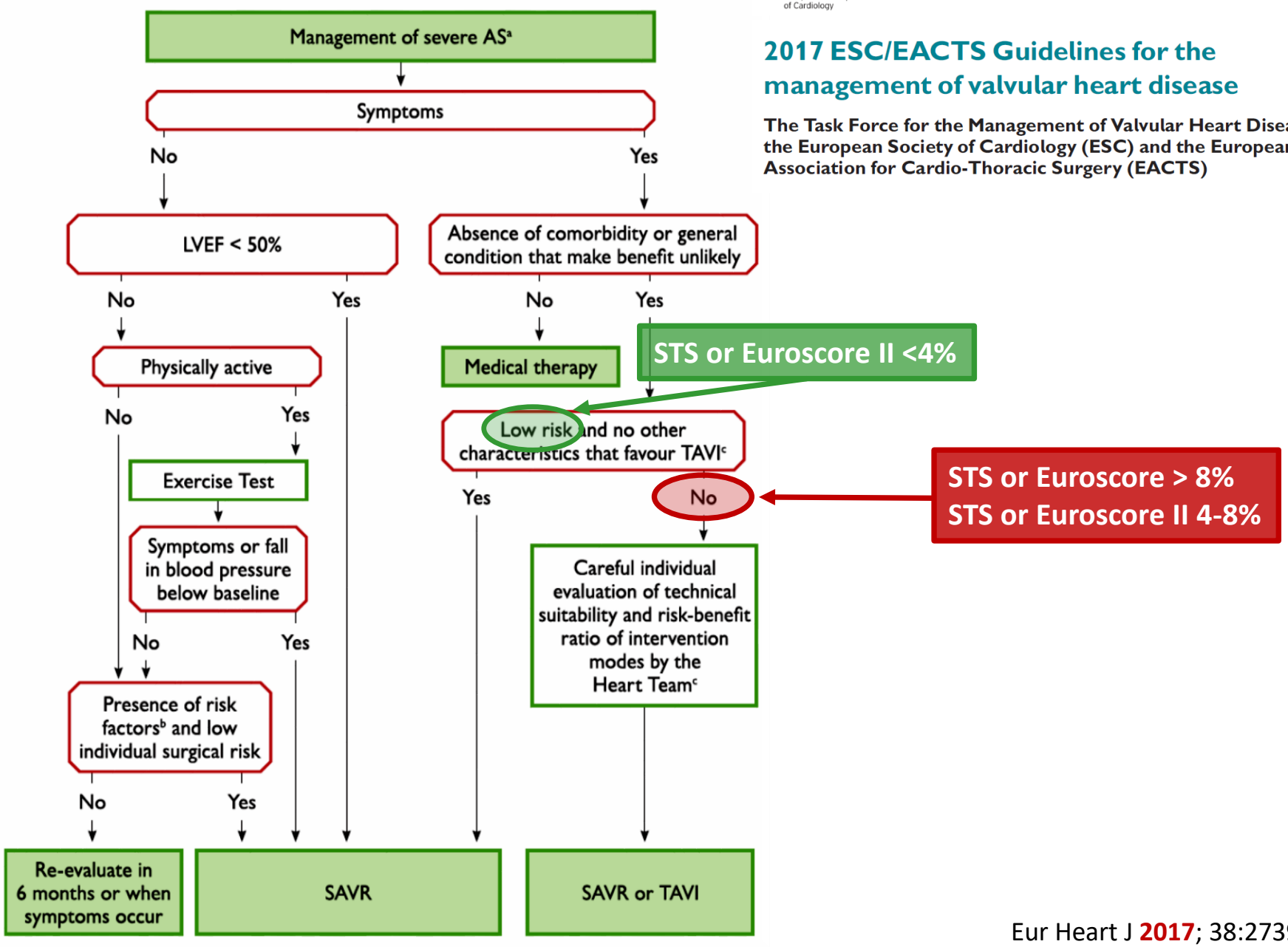
Odds ratio and 95% CI



ESC
European Society of Cardiology

2017 ESC/EACTS Guidelines for the management of valvular heart disease

The Task Force for the Management of Valvular Heart Disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)



Eur Heart J **2017**; 38:2739–91
doi:10.1093/eurheartj/ehx391

Table 7 Aspects to be considered by the Heart Team for the decision between SAVR and TAVI in patients at increased surgical risk (see Table of Recommendatio in section 5.2.)

	Favours TAVI	Fav S
Clinical characteristics		
STS/EuroSCORE II <4% (logistic EuroSCORE I <10%)[a]		+
STS/EuroSCORE II ≥4% (logistic EuroSCORE I ≥10%)[a]	+	
Presence of severe comorbidity (not adequately reflected by scores)	+	
Age <75 years		
Age		
risk w		
Expected patie		
Severe chest deformation or scoliosis		
Short distance between coronary ostia and aortic valve annulus		+
Size of aortic valve annulus out of range for TAVI		+
Aortic root morphology unfavourable for TAVI		+
Valve morphology (bicuspid, degree of calcification, calcification pattern) unfavourable for TAVI		+
Presence of thrombi in aorta or LV		+
Cardiac conditions in addition to aortic stenosis that require consideration for concomitant intervention		
Severe CAD requiring revascularization by CABG		+
Severe primary mitral valve disease, which could be treated surgically		+
Severe tricuspid valve disease		+
Aneurysm of the ascending aorta		+
Septal hypertrophy requiring myectomy		+

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Elements supporting indication to TAVI: typical domains of <u>geriatric</u> medicine!

ESC European Society of Cardiology

2017 ESC/EACTS Guidelines for the management of valvular heart disease

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	Favours TAVI	Favours SAVR
al characteristics		
roSCORE II <4% EuroSCORE I <10%)[a]		+
oSCORE II ≥4% gistic EuroSCORE I ≥10%)[a]	+	
Presence of severe comorbidity (not adequately reflected by scores)	+	
e <75 years		+
Age ≥75 years	+	
Previo cardiac surgery	+	
Frailty[b]	+	
Restricted mobility and conditions that may affect the rehabilitation process after the procedure	+	
Suspicion of endocarditis		+

Eur Heart J **2017**; 38:2739–91
doi:10.1093/eurheartj/ehx391

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ROMA 28 novembre 01 dicembre 2018 Auditorium della Tecnica, Roma

Il Geriatra e la TAVI: a che punto siamo?

Niccolò Marchionni

Ordinario di Geriatria, Università di Firenze
Direttore Dipartimento Cardiotoracovascolare
Azienda Ospedaliero-Universitaria Careggi

Di cosa voglio parlare

- **Potenziale futilità degli interventi**
- **Fragilità e TAVI**
- **Il geriatra nello Heart Team**

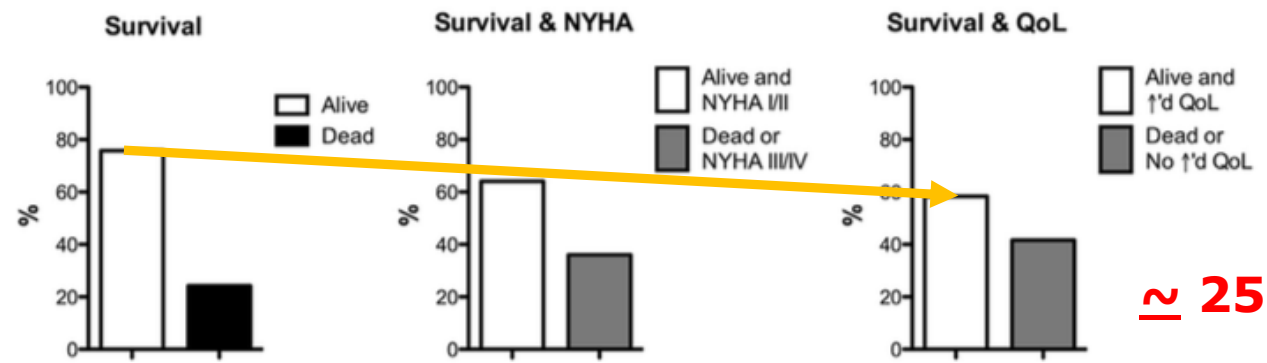
STATE-OF-THE-ART PAPER

CME

Futility, Benefit, and Transcatheter Aortic Valve Replacement

Brian R. Lindman, MD, MSCI,* Karen P. Alexander, MD,† Patrick T. O'Gara, MD,‡
Jonathan Afilalo, MD, MSc§

JACC Cardiovasc Interv 2014



~ 25% futility

utility

Figure 1. Survival, Heart Failure Symptoms, and QoL at 1 Year in Patients Treated With TAVR in the PARTNER Trial

Data shown is from the PARTNER Trial (8–11). NYHA = New York Heart Association; PARTNER = Placement of Aortic Transcatheter Valve trial; QoL = quality of life; TAVR = transcatheter aortic valve replacement; ↑'d = increased.

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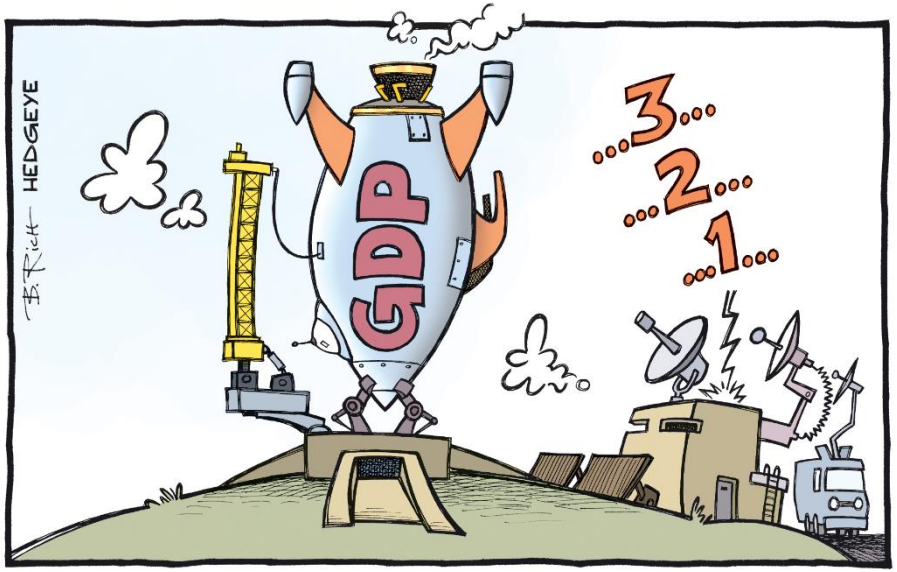
3.2 Risk stratification

… Patient's life expectancy, expected quality of life and patient preference should be considered … The **futility** of interventions in patients unlikely to benefit from the treatment has to be taken into consideration, particularly for TAVI … The role of the **Heart Team** is essential to take all of these data into account …

Eur Heart J **2017**; 38:2739–91
doi:10.1093/eurheartj/ehx391

Potenziale futilità degli interventi… in un’epoca di risorse limitate…



«CERCHERANNO DI STRONCARCI CON LO SPREAD, MA NON ARRETREREMO DI UN MILLIMETRO» ...

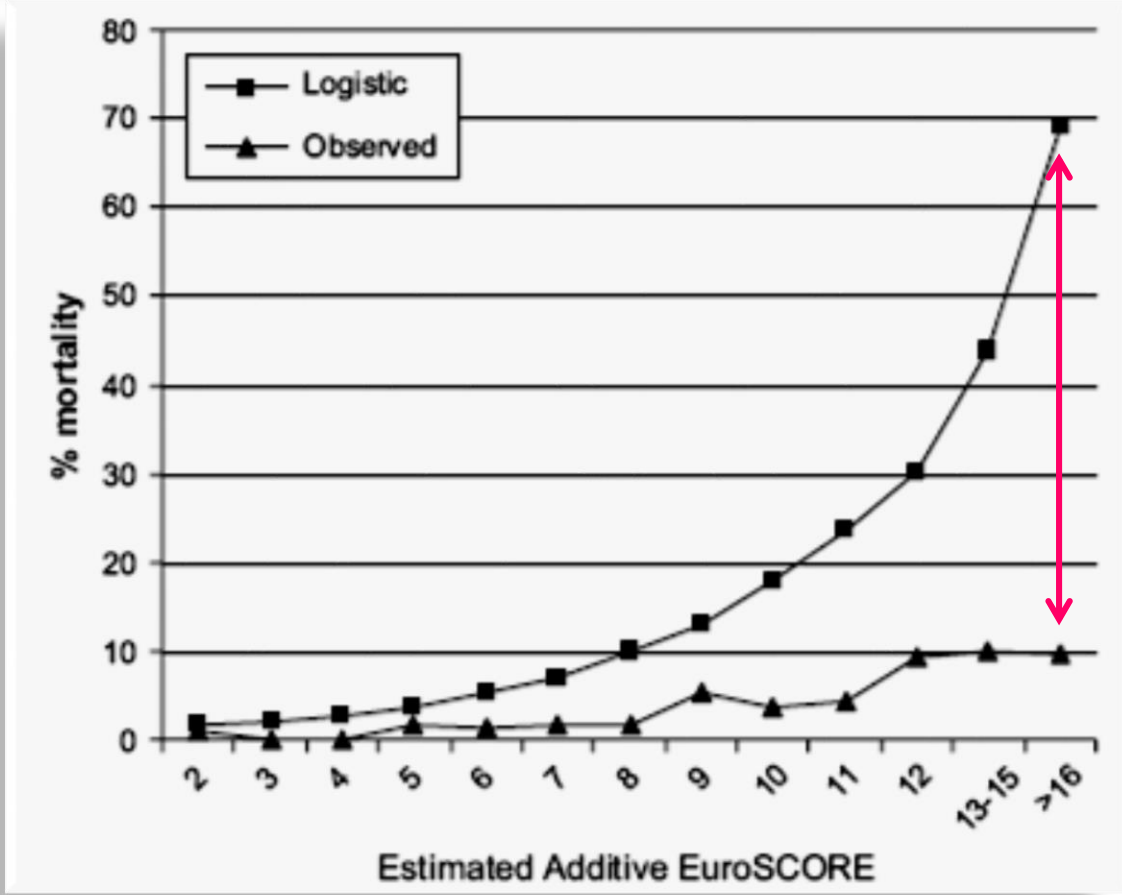
Di cosa voglio parlare

- Potenziale futilità degli interventi
- **Fragilità e TAVI**
- Il geriatra nello Heart Team

Focus on **Frailty** and Cardiac Surgery

Is the European System for Cardiac Operative Risk Evaluation model valid for estimating the operative risk of patients considered for percutaneous aortic valve replacement?

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



J Thorac Cardiovasc Surg 2008;136:566-71

Frailty: a new research issue in cardiac surgery

Role of Frailty in Patients With Cardiovascular Disease

Jonathan Afilalo, MD[a,*], Sathya Karunananthan, MSc[b], Mark J. Eisenberg, MD, MPH[c,d], Karen P. Alexander, MD[e], and Howard Bergman, MD[b]

The American Journal of Cardiology 2009

Frail Patients Are at Increased Risk for Mortality and Prolonged Institutional Care After Cardiac Surgery

Dana H. Lee, Karen J. Buth, Billie-Jean Martin, Alexandra M. Yip and Gregory M. Hirsch

Circulation 2010
Journal of the American Heart Association

Evaluation of Multidimensional Geriatric Assessment as a Predictor of Mortality and Cardiovascular Events After Transcatheter Aortic Valve Implantation

Frailty index

Stefan Stortecky, MD,* Andreas W. Schoenenberger, MD,† André Moser, PhD,‡ Bindu Kalesan, PhD,‡ Peter Jüni, MD,‡ Thierry Carrel, MD,§ Seraina Bischoff, RN,* Christa-Maria Schoenenberger, RN,* Andreas E. Stuck, MD,† Stephan Windecker, MD,* Peter Wenaweser, MD*

JACC cardiovascular Interventions 2012

EDITORIAL COMMENT

Frailty Scores and the Writing on the Wall*

Todd M. Dewey, MD

EDITORIAL COMMENTARY

Frailty: It's hard to define, but you know it when you see it

Keith B. Allen, MD

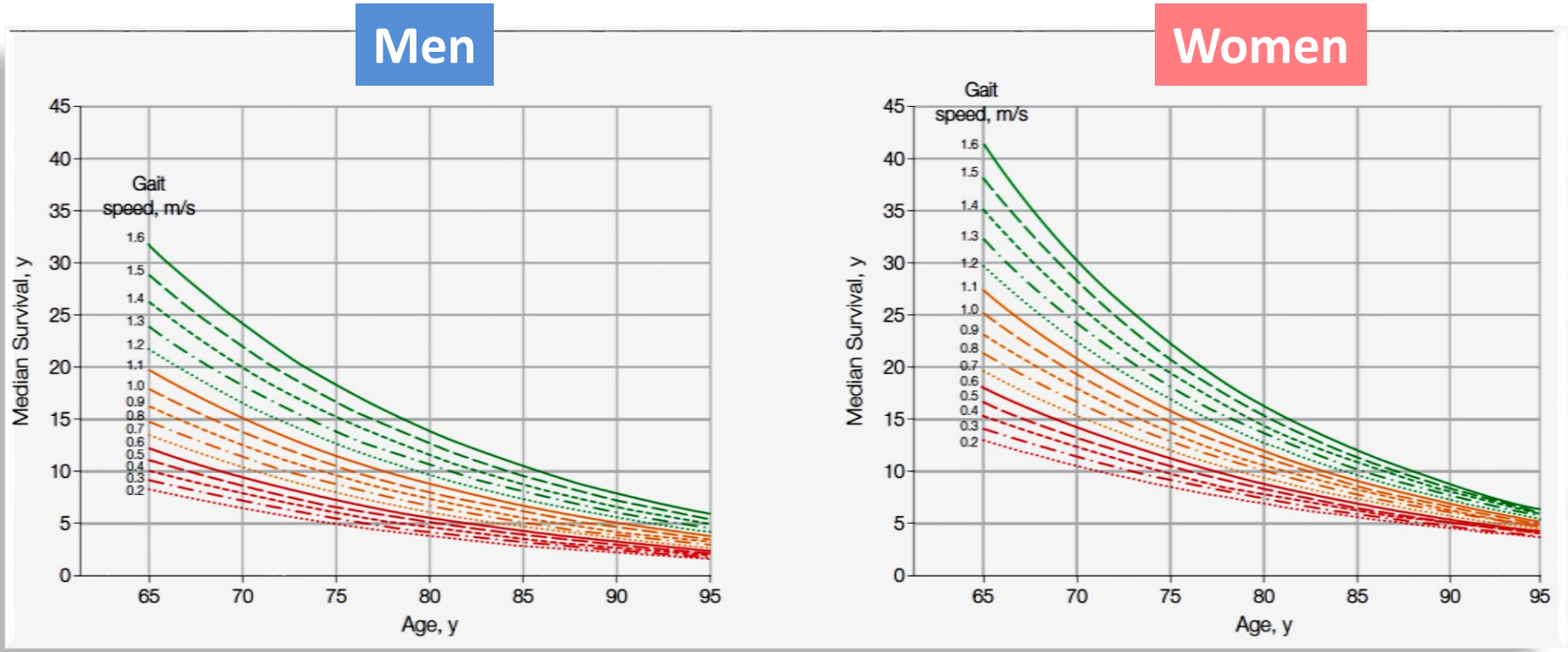
J Thorac Cardiovasc Surg. 2014;148:3117-8

Frailty concept: two 78-year-old patients with severe degenerative mitral valve regurgitation and **comparable Logistic Euro-Score (12%)**

ORIGINAL CONTRIBUTION

Gait Speed and Survival in Older Adults

Predicted Median Life Expectancy by Age and Gait Speed



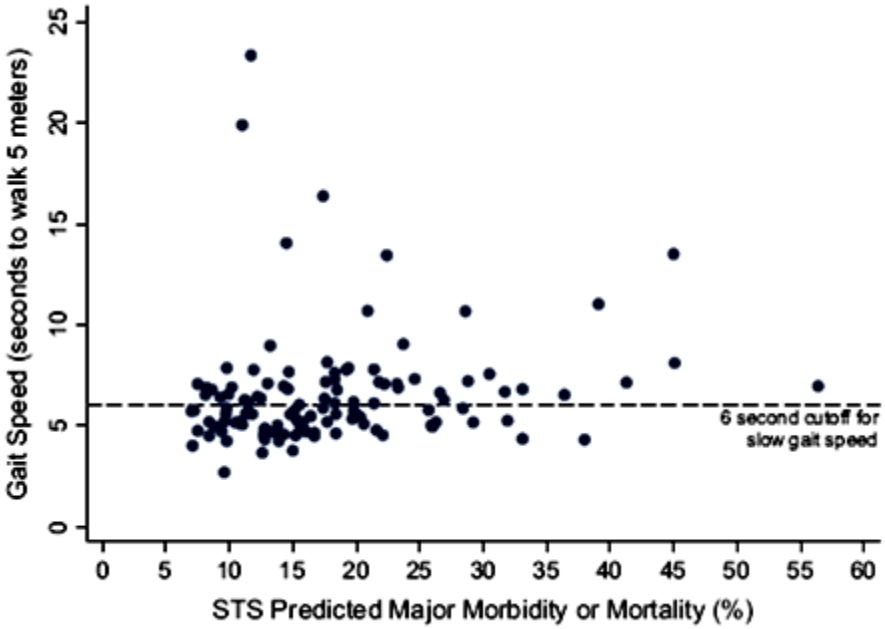
Studensky S, et al JAMA 2011;305:50-8

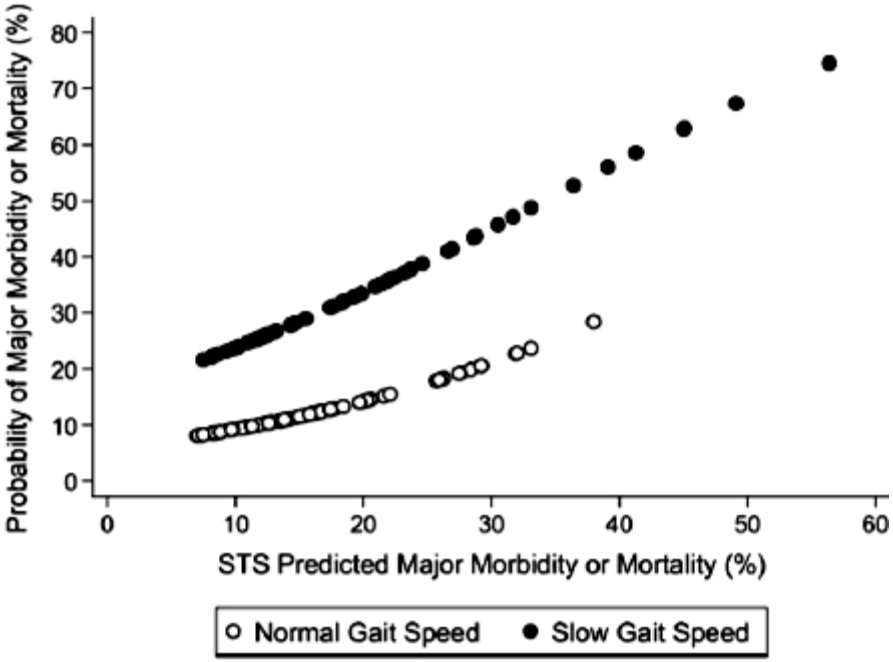
Gait Speed as an Incremental Predictor of Mortality and Major Morbidity in Elderly Patients Undergoing Cardiac Surgery

Jonathan Afilalo, MD, MSc,*† Mark J. Eisenberg, MD, MPH,*‡ Jean-François Morin, MD,§
Howard Bergman, MD,‡‖¶ Johanne Monette, MD, MSc,‡‖¶ Nicolas Noiseux, MD,#
Louis P. Perrault, MD, PhD,** Karen P. Alexander, MD,†† Yves Langlois, MD,§
Nandini Dendukuri, PhD,† Patrick Chamoun, RRT,§ Georges Kasparian, BSc,‡‡
Sophie Robichaud, RRT,** S. Michael Gharacholou, MD,†† Jean-François Boivin, MD, ScD†‡
Montreal, Quebec, Canada; and Durham, North Carolina

J Am Coll Cardiol 2010;56:1668–76

- **Age >70 years**
- **slow gait speed: time ≥ 6 sec taken to walk 5 meters**





STS: Society of Thoracic Surgeons score

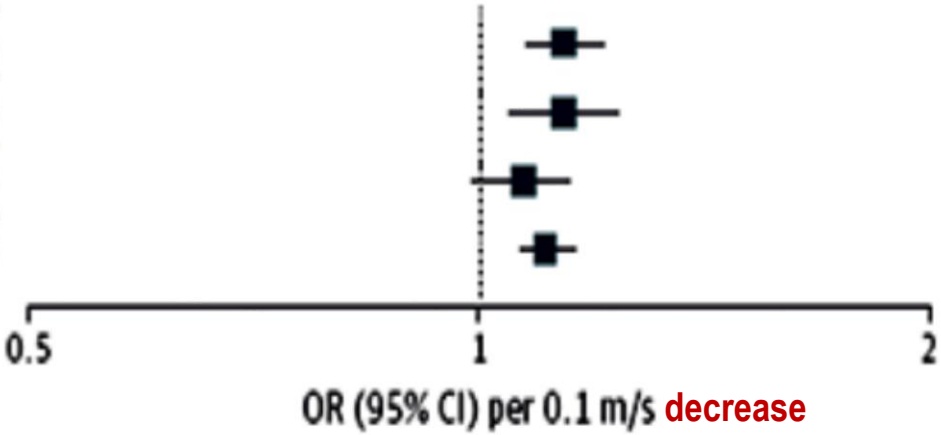
Gait Speed and Operative Mortality in Older Adults Following Cardiac Surgery

Jonathan Afilalo, MD, MSc; Sunghee Kim, PhD; Sean O'Brien, PhD; J. Matthew Brennan, MD, MPH; Fred H. Edwards, MD; Michael J. Mack, MD; James B. McClurken, MD; Joseph C. Cleveland Jr, MD; Peter K. Smith, MD; David M. Shahian, MD; Karen P. Alexander, MD

Published online
May 11, **2016**

Figure 3. Effect of Gait Speed After Adjusting for Society of Thoracic Surgeons (STS) Predicted Risk

Surgery	No.	OR (95% CI) per 0.1 m/s	*P* Value
CABG	9005	1.14 (1.08-1.21)	<.001
Valve	3765	1.14 (1.05-1.24)	.002
CABG plus valve	2401	1.07 (0.99-1.15)	.07
All pooled	15 171	1.11 (1.07-1.16)	<.001



*JAMA Cardiol. doi:10.1001/jamacardio.**2016**.0316*

Focus on **Frailty** and TAVI

Predictors of functional decline in elderly patients undergoing transcatheter aortic valve implantation (TAVI)

Andreas W. Schoenenberger[1†], Stefan Stortecky[2†], Stephanie Neumann[1], André Moser[1,3], Peter Jüni[3], Thierry Carrel[4], Christoph Huber[4], Marianne Gandon[2], Seraina Bischoff[2], Christa-Maria Schoenenberger[2], Andreas E. Stuck[1], Stephan Windecker[2*], and Peter Wenaweser[2]

Table 2 Univariable associations of risk scores (EuroSCORE, STS score and frailty index) and of the frailty index compo ities of daily li

Predic						NR[2]
Risk sc						
Logis						
Lin						0.050
Dic						0.006
STS						
Lin						0.068
Dichotomized (≥5 vs. <5%)	1.14 (0.44–2.95)	0.78	0.001	1.83 (0.80–4.16)	0.15	0.025
Frailty index						
Linear (OR per 1 point increase)	1.57 (1.20–2.05)	0.001	0.135	1.74 (1.38–2.20)	<0.001	0.236
Dichotomized (frail vs. non-frail)	3.31 (1.21–9.03)	0.02	0.085	4.46 (1.85–10.75)	0.001	0.142

The frailty index, but not established risk scores, was predictive of functional decline. Refinement of this index might help to identify patients who potentially benefit from additional geriatric interventions after TAVI.

Frailty index: cognition, **mobility**, nutrition, BADL, IADL

European Heart Journal (2013) **34**, 684–692

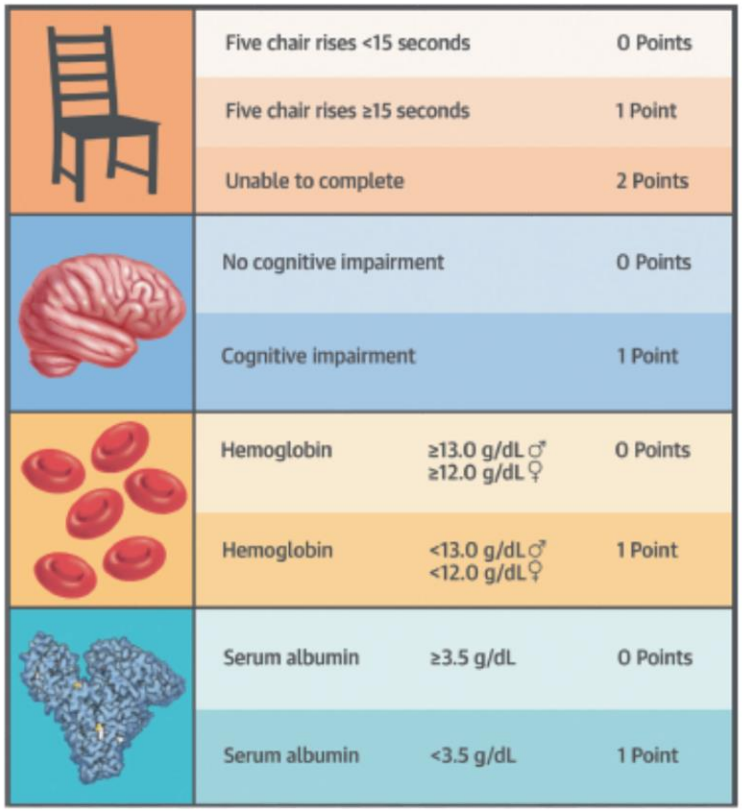
Frailty in Older Adults Undergoing Aortic Valve Replacement

The FRAILTY-AVR Study

JACC VOL. 70, NO. 6, 2017

EFT: Essential Frailty Toolkit

CENTRAL ILLUSTRATION Essential Frailty Toolset in Older Adults Undergoing Aortic Valve Replacement



	Five chair rises <15 seconds		0 Points
	Five chair rises ≥15 seconds		1 Point
	Unable to complete		2 Points
	No cognitive impairment		0 Points
	Cognitive impairment		1 Point
	Hemoglobin	≥13.0 g/dL ♂ ≥12.0 g/dL ♀	0 Points
	Hemoglobin	<13.0 g/dL ♂ <12.0 g/dL ♀	1 Point
	Serum albumin	≥3.5 g/dL	0 Points
	Serum albumin	<3.5 g/dL	1 Point

646 TAVR included

374 SAVR included

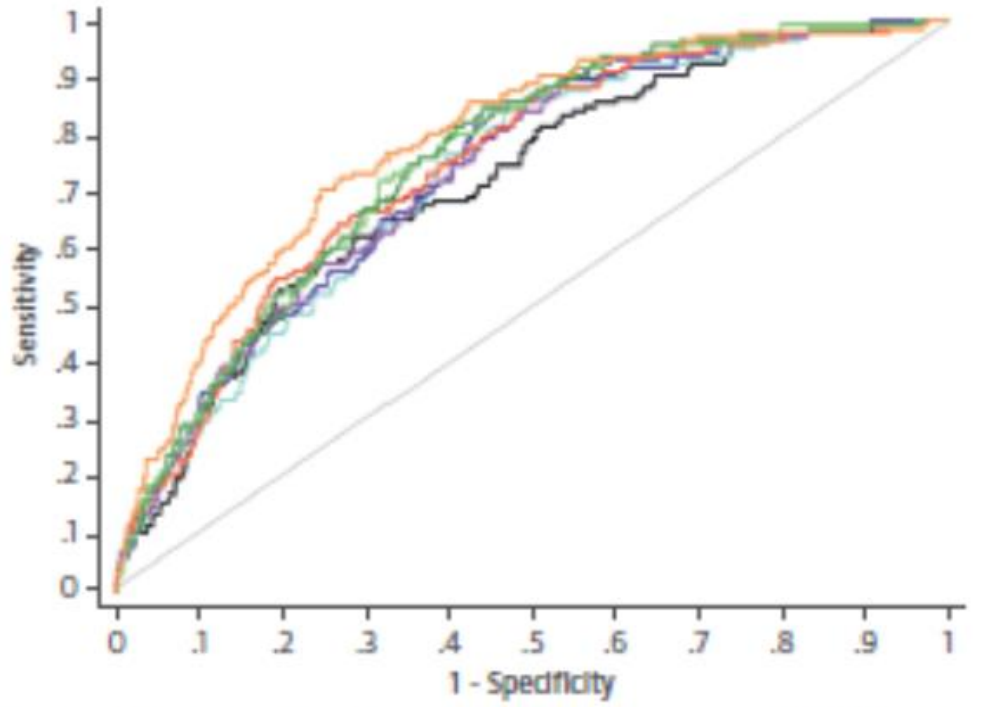
EFT Score	1-Year Mortality TAVR	1-Year Mortality SAVR
0-1	6%	3%
2	15%	7%
3	28%	16%
4	30%	38%
5	65%	50%

Frailty in Older Adults Undergoing Aortic Valve Replacement

The FRAILTY-AVR Study

JACC VOL. 70, NO. 6, 2017

FIGURE 4 ROC Curves for Frailty Scales to Predict 1-Year Mortality



Clinical Model	0.713 (0.670, 0.756)	+ SPPB	0.734 (0.694, 0.775)
+ Fried	0.724 (0.683, 0.765)	+ Bern	0.753 (0.714, 0.791)
+ Fried Plus	0.734 (0.694, 0.774)	+ Columbia	0.752 (0.714, 0.790)
+ Rockwood	0.743 (0.702, 0.783)	+ EFT	0.784 (0.745, 0.822)

RESEARCH ARTICLE Open Access

Comprehensive geriatric assessment in patients undergoing transcatheter aortic valve implantation – results from the CGA-TAVI multicentre registry

Andrea Ungar[1*], Giulio Mannarino[1], Nathalie van der Velde[2], Jan Baan[3], Marie-Pierre Thibodeau[4], Jean-Bernard Masson[4], Gennaro Santoro[1], Martijn van Mourik[3], Sofie Jansen[2], Cornelia Deutsch[5], Peter Bramlage[5], Jana Kurucova[6], Martin Thoenes[6], Stefania Maggi[7] and Andreas W. Schoenenberger[8]

Logistic regression for the prediction of events at 3 months by CGA at baseline

	Multivariable OR (95% CI)	*p*-value
Death and/or hospitalisation		
Increasing MPI score (high vs. low)	3.34 (1.39–8.02)[a]	0.0068
Decreasing SPPB (low vs. high)	1.15 (1.01–1.54)	0.0380
Increasing Silver Code (high vs. low)	1.03 (0.91–1.15)	0.6576
Death and/or non-fatal stroke		
Increasing MPI score (high vs. low)	4.75 (1.40–16.08)	0.0123
Decreasing SPPB (low vs. high)	1.62 (1.08–2.43)	0.0188
Increasing Silver Code (high vs. low)	1.04 (0.87–1.23)	0.6938

MPI multidimensional prognostic index, SPPB short physical performance battery. All values adjusted for age, gender, NYHA class and surgical risk (EuroSCORE)

Ungar et al. BMC Cardiovascular Disorders (2018) 18:1

ESC
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2017 ESC/EACTS Guidelines for the management of valvular heart disease

The Task Force for the Management of Valvular Heart Disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

3.3 Special considerations in elderly patients

… Besides specific organ comorbidities, there is **growing interest in the assessment of frailty**, an overall marker of **impairment of functional, cognitive and nutritional status**. Frailty is associated with increased morbidity and mortality after surgery and TAVI. The assessment of frailty should not rely on a subjective approach, such as the 'eyeball test', but rather on a combination of different objective estimates …

Eur Heart J **2017**; 38:2739–91
doi:10.1093/eurheartj/ehx391

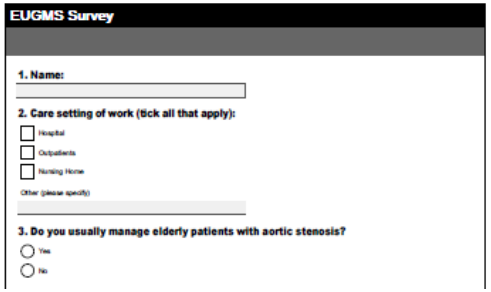
Di cosa voglio parlare

- Potenziale futilità degli interventi
- Fragilità e TAVI
- **Il geriatra nello Heart Team**

A call to action - Geriatricians' experience in treatment of aortic stenosis and involvement in transcatheter aortic valve implantation

The EUGMS TAVI group Survey (2013)

Andrea Ungar, Peter Bramlage, Martin Thoenes, Stefania Zannoni and Jean-Pierre Michel, European Geriatric Medicine, **2013**


EUGMS Survey

1. Name:

2. Care setting of work (tick all that apply):

- Hospital
- Outpatients
- Nursing Home

Other (please specify)

3. Do you usually manage elderly patients with aortic stenosis?

- Yes
- No

Project Background

Target group:

Fieldwork: 19.06.2012 – 04.09.2012

Number of respondents: n=323/2500 e-mails (only 141 complete)

Methodology: Online interviews

- Interview duration of 10-15 minutes
- Mainly structured interviews with one open-ended and few semi-open ended questions
- Respondents were able to enter the questionnaire via a link placed in EUGMS homepage

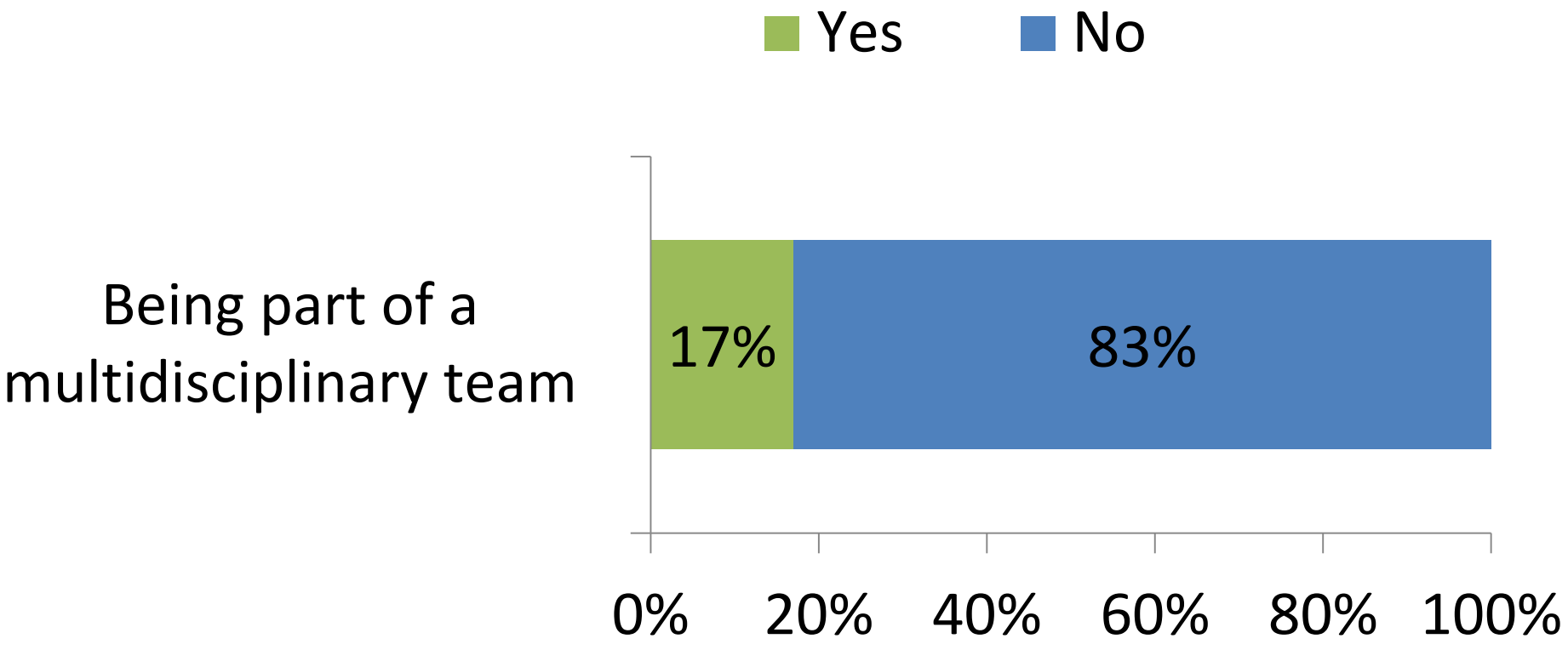
Main topics addressed:

1. Demographics & professional background
2. Experience in treatment of aortic stenosis
3. Experience with TAVI

Andrea Ungar et al, European Geriatric Medicine, 2013

Experience with TAVI

Membership in a multidisciplinary heart team

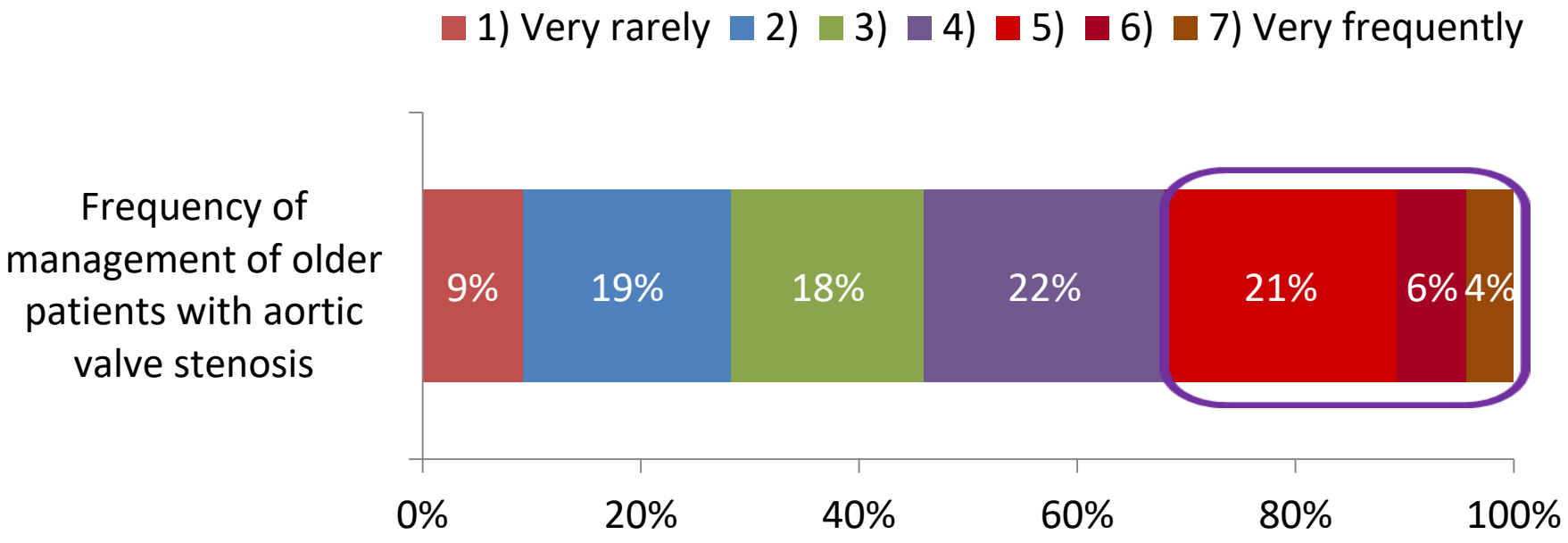


Only a **minority of respondents (17%)** referring patients for TAVI in the past 2 years are members of a **multidisciplinary** heart team

Andrea Ungar et al, European Geriatric Medicine, 2013

Frequency of management of patients with AS

31% of respondents (n=341) indicated that they managed patients with AS on a frequent basis.



Andrea Ungar et al, European Geriatric Medicine, 2013

ESC
European Society of Cardiology

2017 ESC/EACTS Guidelines for the management of valvular heart disease

The Task Force for the Management of Valvular Heart Disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

3. General comments

Decision making for intervention should be made by a '**Heart Team**' with a particular expertise in VHD, comprising cardiologists, cardiac surgeons, imaging specialists, anaesthetists and, if needed, general practitioners, **geriatricians** and heart failure, electrophysiology or intensive care specialists.

Indications for intervention in aortic stenosis and recommendations for the choice of intervention mode

In patients who are at increased surgical risk (STS or EuroSCORE II ≥4% or logistic EuroSCORE I ≥10% or other risk factors not included in these scores such as **frailty** …), the decision between SAVR and TAVI should be made by the **Heart Team** according to the individual patient characteristics, with **TAVI being favoured in elderly patients** …

I	B

Eur Heart J **2017**; 38:2739–91
doi:10.1093/eurheartj/ehx391

C.L., donna, 76 anni

Fattori di rischio cardiovascolare:

- Ipertensione arteriosa
- Ex forte fumatrice

Anamnesi:

- 2006 ictus emorragico con vescica neurologica residua; mobilità limitata con ausilio di deambulatore
- Ateromasia carotidea non critica
- BPCO in O_2-terapia domiciliare (1-2 l/min) con riacutizzazioni trimestrali; PFR: grave deficit ventilatorio di tipo ostruttivo non reversibile; FEV1 37%; dispnea classe NYHA III; Hb 11 g/dL, Cr 0.42 mg/dL, **NT-proBNP** 1026 pg/mL
- **Stenosi aortica** nota da circa 4 anni, in follow-up ambulatoriale; ipertrofia concentrica del VS; FE 54%; SAO severa calcifica (G medio 49 mmHg, G max 72 mmHg, Vmax 4.2 m/sec, AVA 0.69 cm^2)

Pulmonary Function Tests Overestimate Chronic Pulmonary Disease in Patients With Severe Aortic Stenosis

Mitchell J. Magee, MD, Morley A. Herbert, PhD, Karen L. Roper, PhD,
Elizabeth Holper, MD, Todd M. Dewey, MD, Tricia Snelus, BA, and Michael J. Mack, MD
Medical City Dallas Hospital and Cardiopulmonary Research Science and Technology Institute, Dallas, Texas

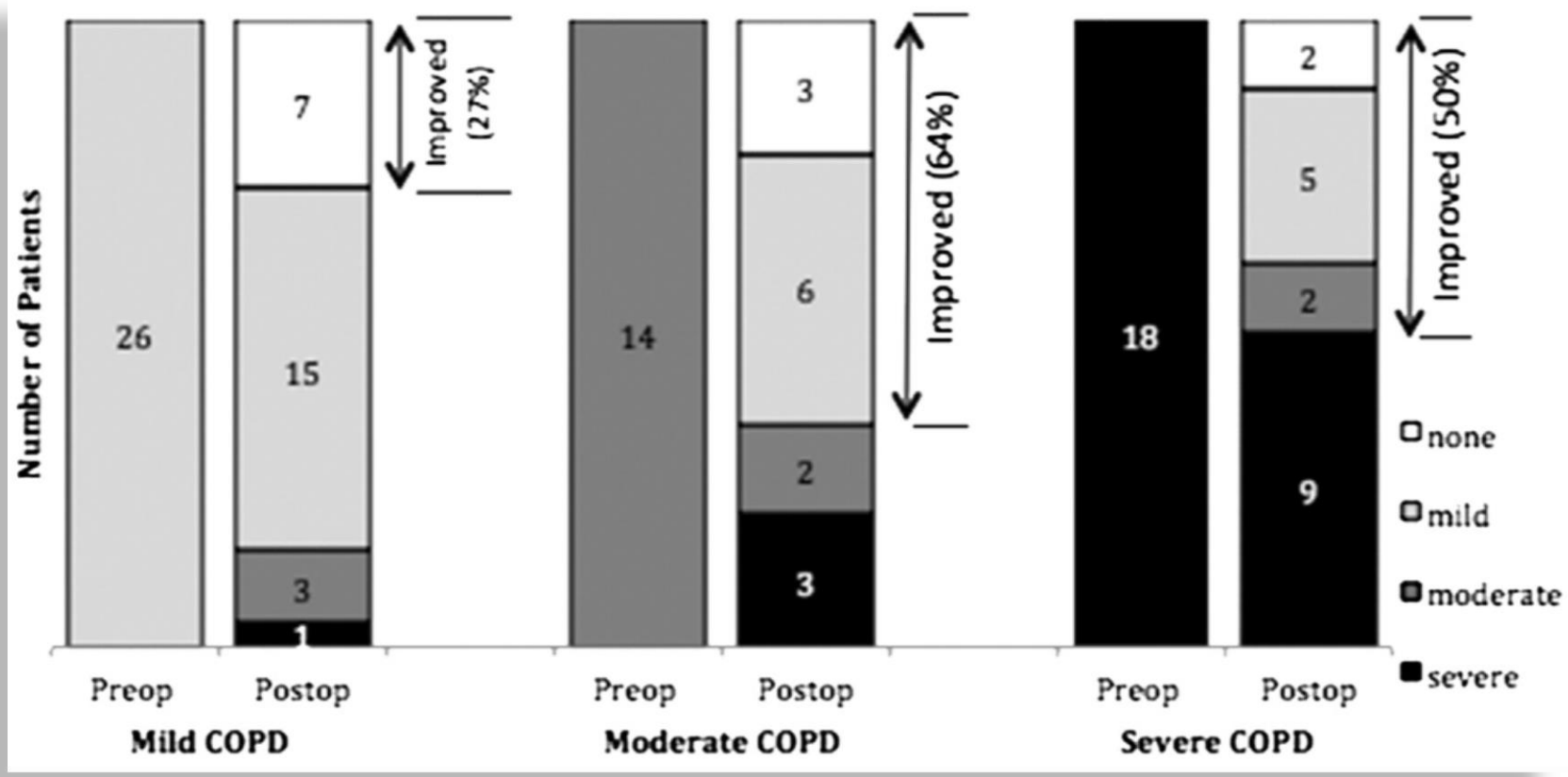
Table 2. Comparison of Aggregate Preoperative and Postoperative Pulmonary Function Test Results

Pulmonary Function Test	Preop	Postop	*p* Value (Paired *t*-test)
FEV1 (% predicted)	56.5 ± 12.8	62.1 ± 20.0	0.011
FVC (% predicted)	59.6 ± 12.3	65.3 ± 16.5	0.008
FEF 25%–75% (% predicted)	49.7 ± 27.3	62.1 ± 43.6	0.006
DLCO (% predicted)	59.4 ± 15.4	56.8 ± 20.4	0.029
FEV1/FVC ratio	0.96 ± 0.17	0.95 ± 0.17	0.422

DLCO = diffusion capacity for carbon monoxide; FEF = forced expiratory flow; FEV1 = forced expiratory volume in 1 second; FVC = forced vital capacity; Postop = postoperative; Preop = preoperative.

Ann Thorac Surg 2013

Transcatheter Aortic Valve Replacement Results in Improvement of Pulmonary Function in Patients With Severe Aortic Stenosis



Gilmore et al., Ann Thorac Surg 2015

Visita (cardio)-geriatrica

- Autonoma nelle BADL (5/6 incontinenza urinaria), parzialmente nelle IADL (5/8)
- Non decadimento cognitivo né depressione del tono dell'umore
- Short Physical Performance Battery score: 1/12
- EuroScore II 4.45%; STS mortality 6.5%

- **Conclusioni**: paziente con rischio chirurgico intermedio ma molto **fragile**, con autonomia funzionale limitata da COPD e SA

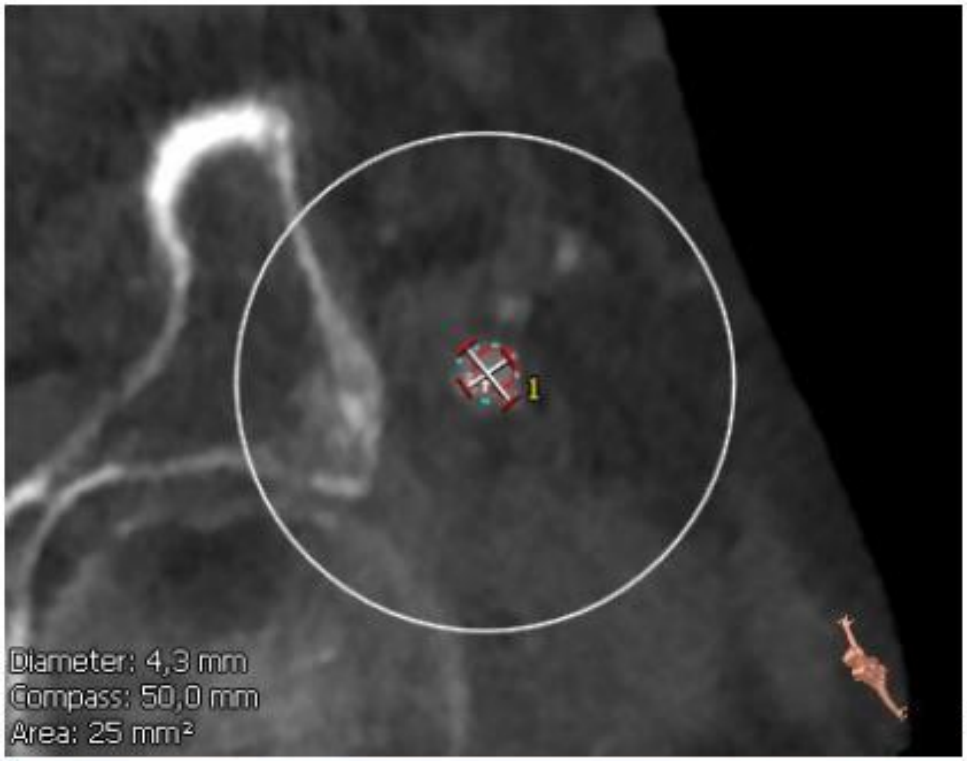
Heart Team (HT) Area Vasta Toscana Centro - AOU Careggi

COMPOSIZIONE, E MODALITÀ OPERATIVE DELL'HT AREA VASTA TOSCANA CENTRO-AOU CAREGGI

1. Direttore DAI Cardiotoracovascolare
2. Direttore SOD Cardiochirurgia
3. Direttore SOD Interventistica Cardiologica Strutturale
4. Direttore SOD Cardiologia Interventistica
5. Cardiologo Interventista o Cardiologo Clinico della AOUC o dell'Area Vasta Toscana Centro che propone e presenta il caso
6. Cardioanestesista
7. Internista SOD Medicina Interna a Indirizzo Cardiovascolare e Perioperatorio; per pazienti con età >75 anche Geriatra (SOD Geriatria-UTIG).

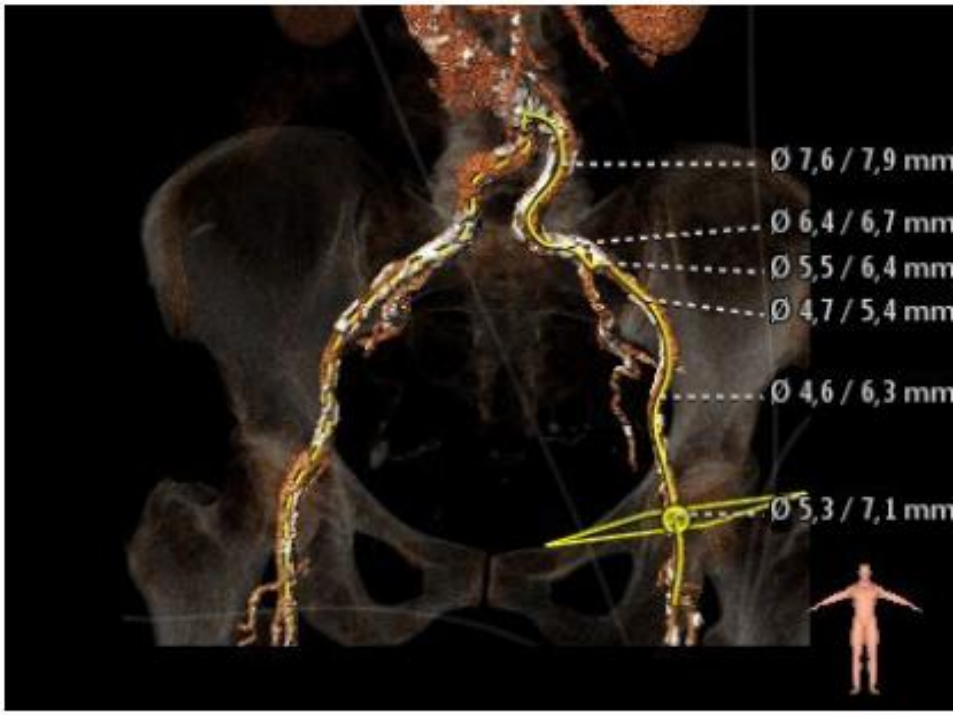
Angio CT: TAVI transfemorale non praticabile

LEFT FEM



ID	Type	Label	Value
1	Distance (Min/Max)	Min. Ø	5,3 mm
		Max. Ø	7,1 mm

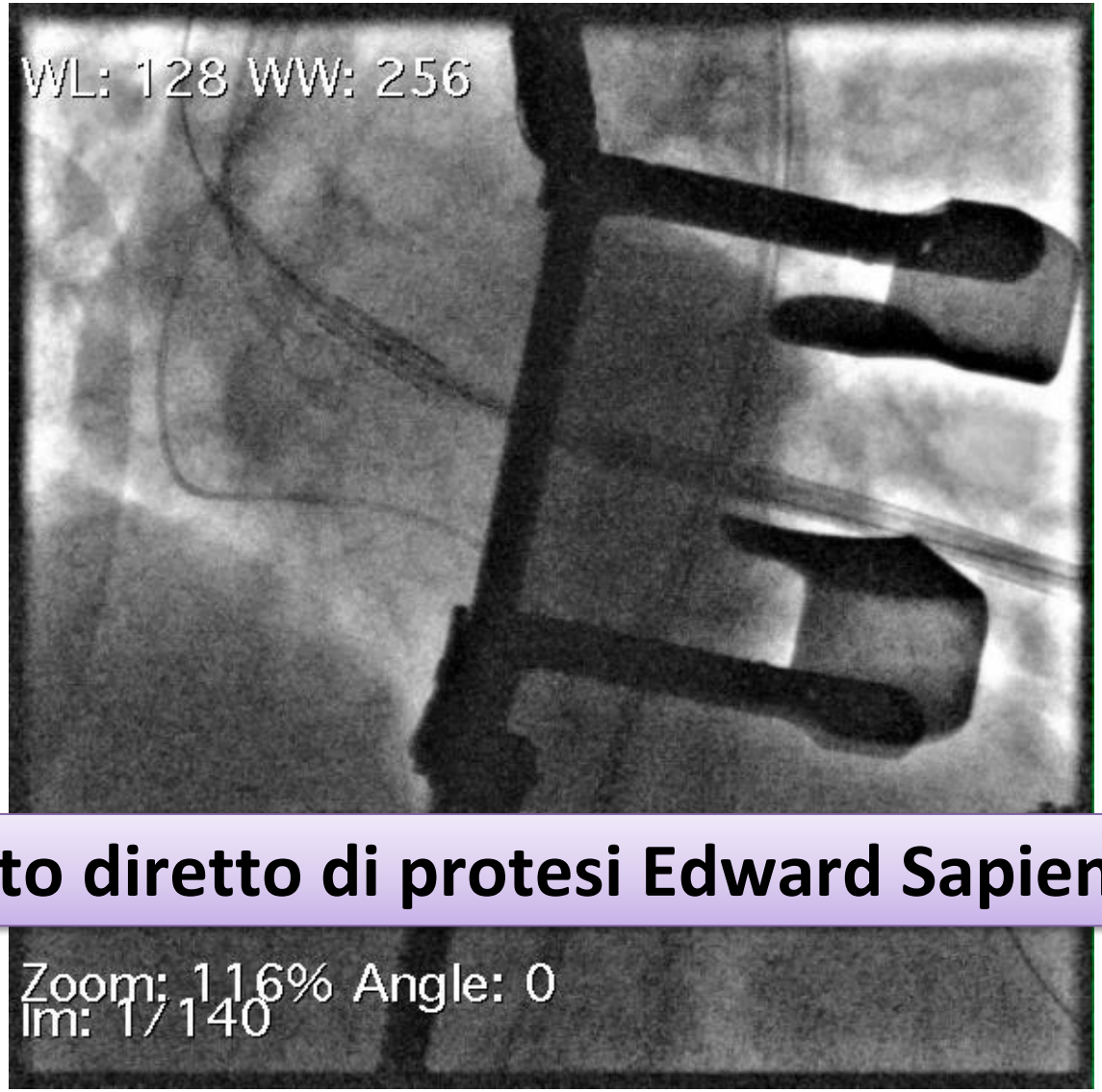
Dimmed background



TAVI transapicale?

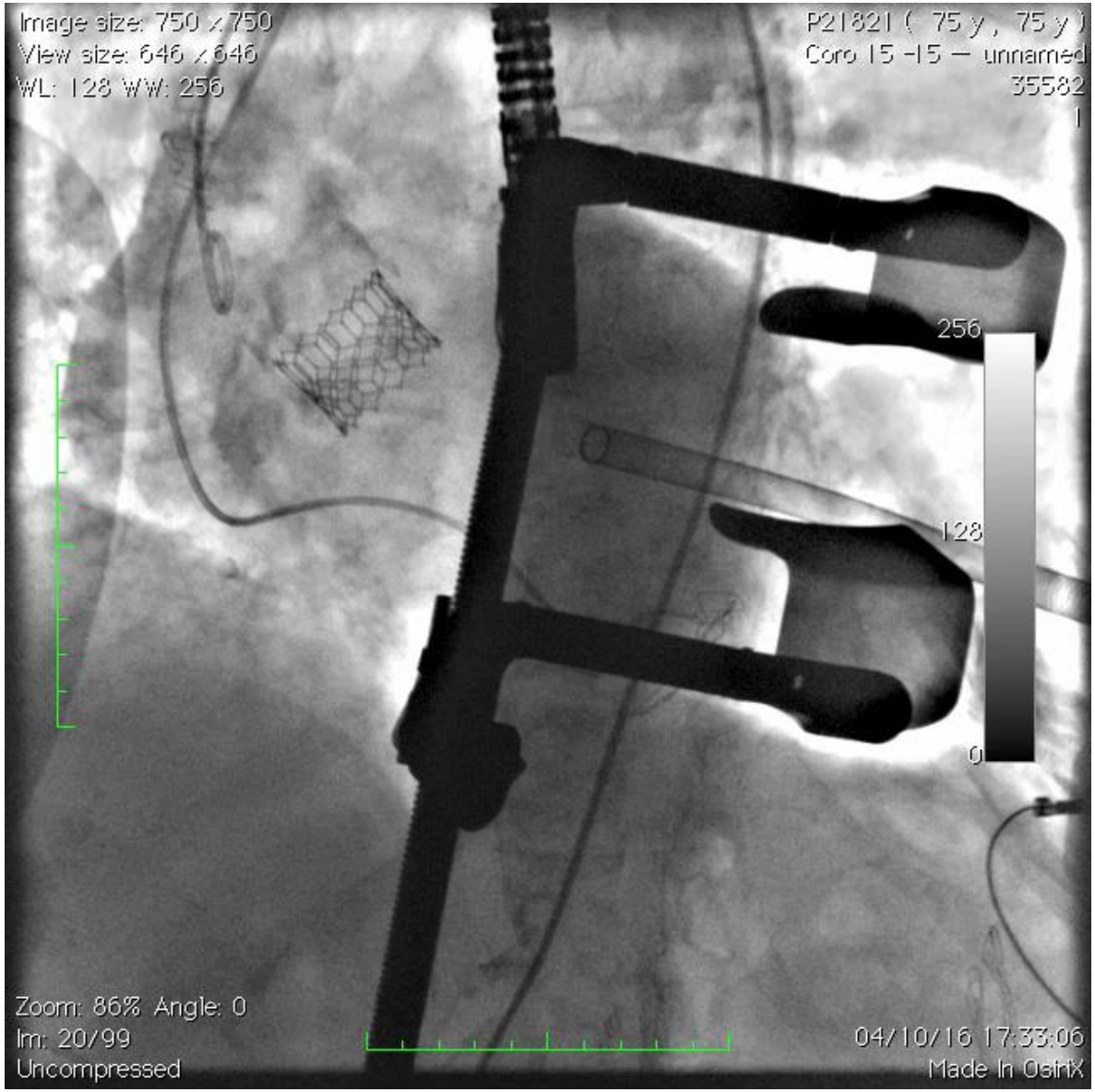
Heart Team: «SI PUO' FARE !»

TAVI transapicale



Impianto diretto di protesi Edward Sapien 3 n.23

TAVI transapicale



Follow-up (2 mesi)

- Miglioramento funzionale (classe NYHA II)
- Migliorata mobilità e indipendenza (esce di casa per brevi tratti)
- SPPB da 1 a 6

Follow-up 2 mesi