



GIOVEDÌ 29

La stenosi aortica di grado moderato nel ventricolo disfunzionante. Va forse trattata?

Michele Senni, *Bergamo*

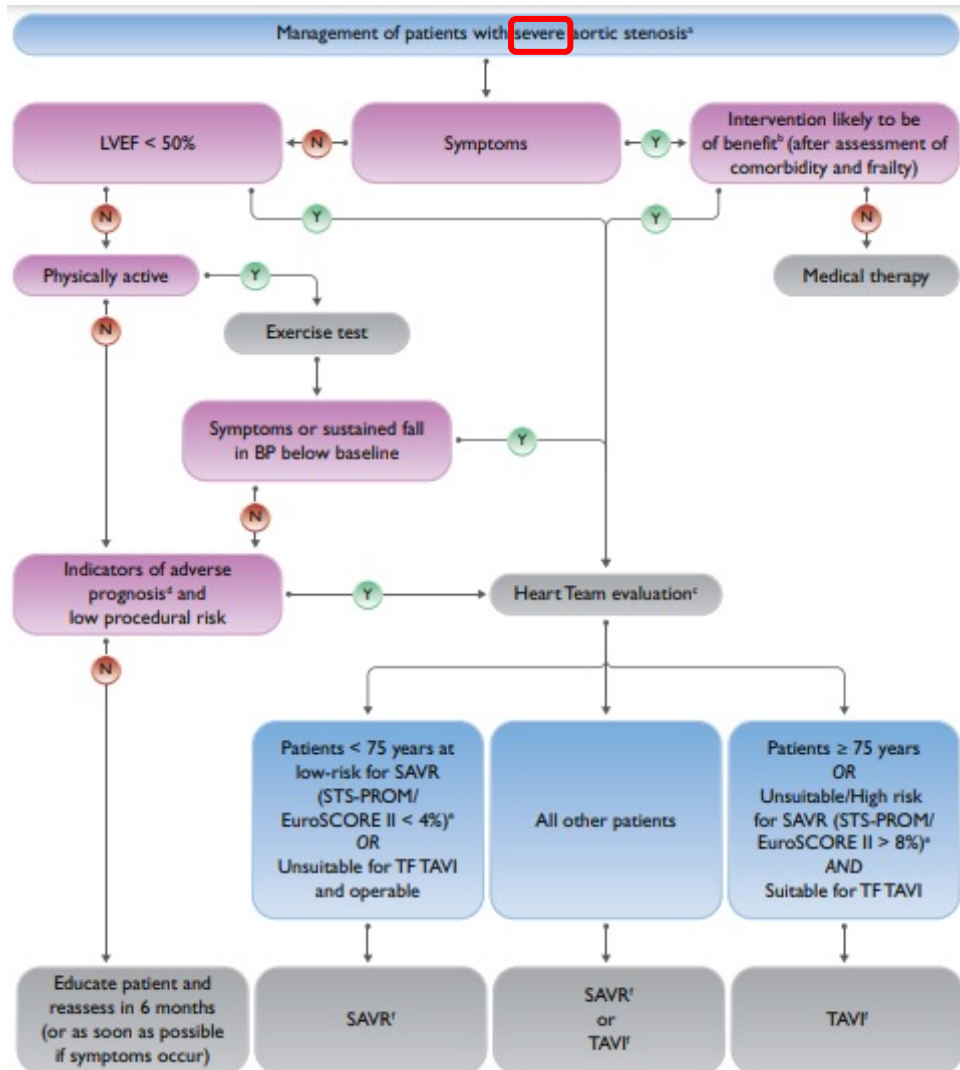


Disclosures

I declare financial interest for **consultancy** with:

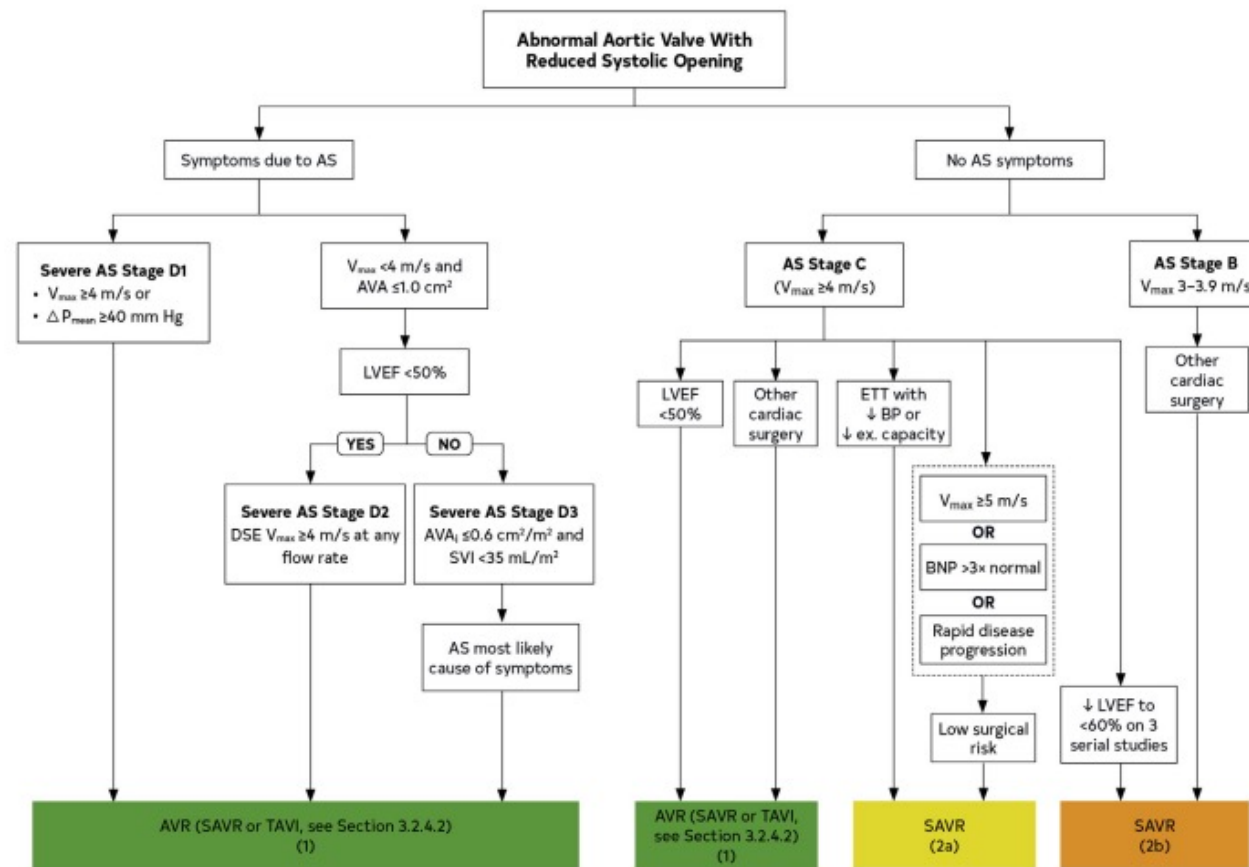
Novartis, Merck, Bayer, Vifor Pharma, Abbott, Boehringer
Ingelheim, Astra-Zeneca, Bioventrix, Servier, Novo Nordisk,
Cardurion

Linee guida ESC/EACTS 2021



Vahanian A et al. Eur Heart J 2022;43:561-632

Linee guida ACC/AHA 2020



Otto CM et al. J Am Coll Cardiol 2021;77:e25-e197

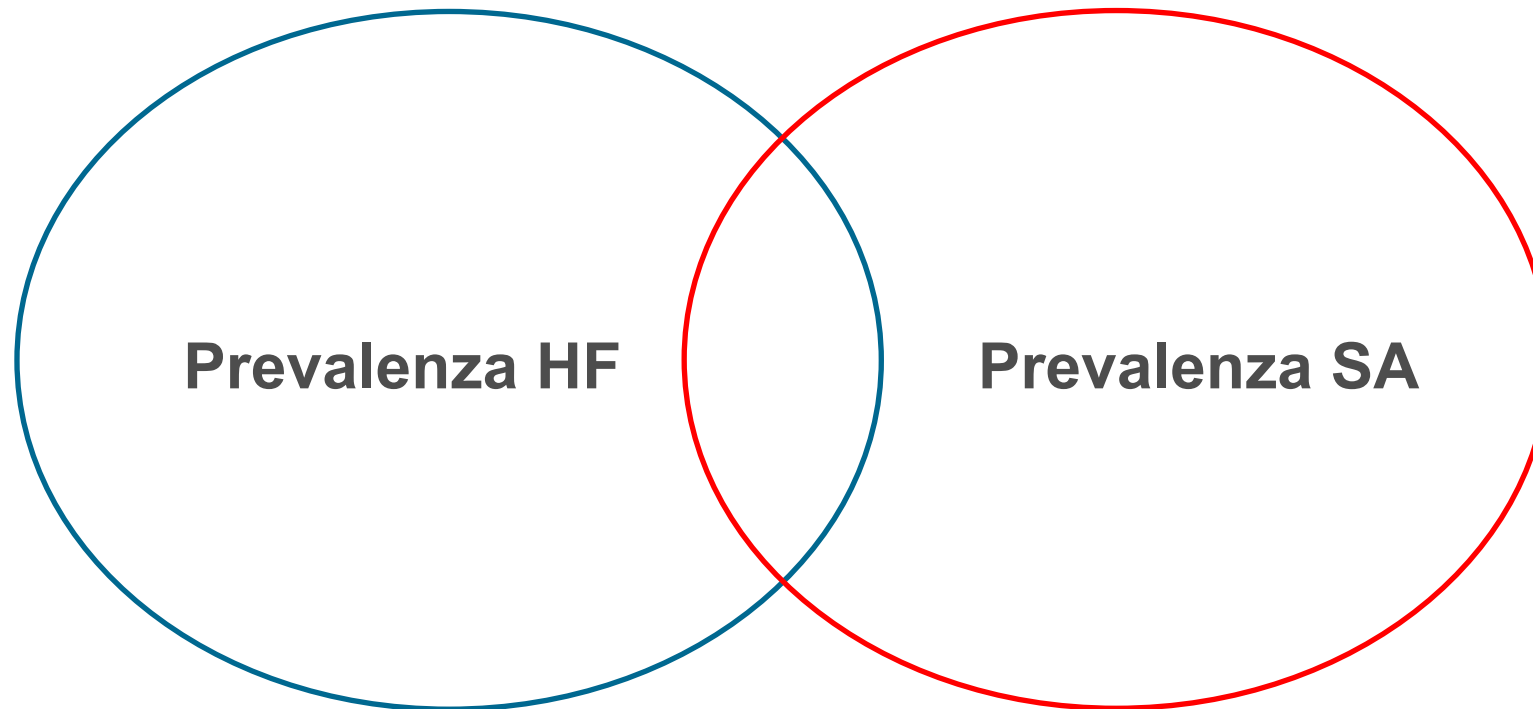
... e la stenosi aortica moderata con FE ridotta?

		
Linee guida insufficienza cardiaca	Problema non citato	Citato il trial TAVR UNLOAD in corso
Linee guida valvole	Problema non citato	Problema non citato

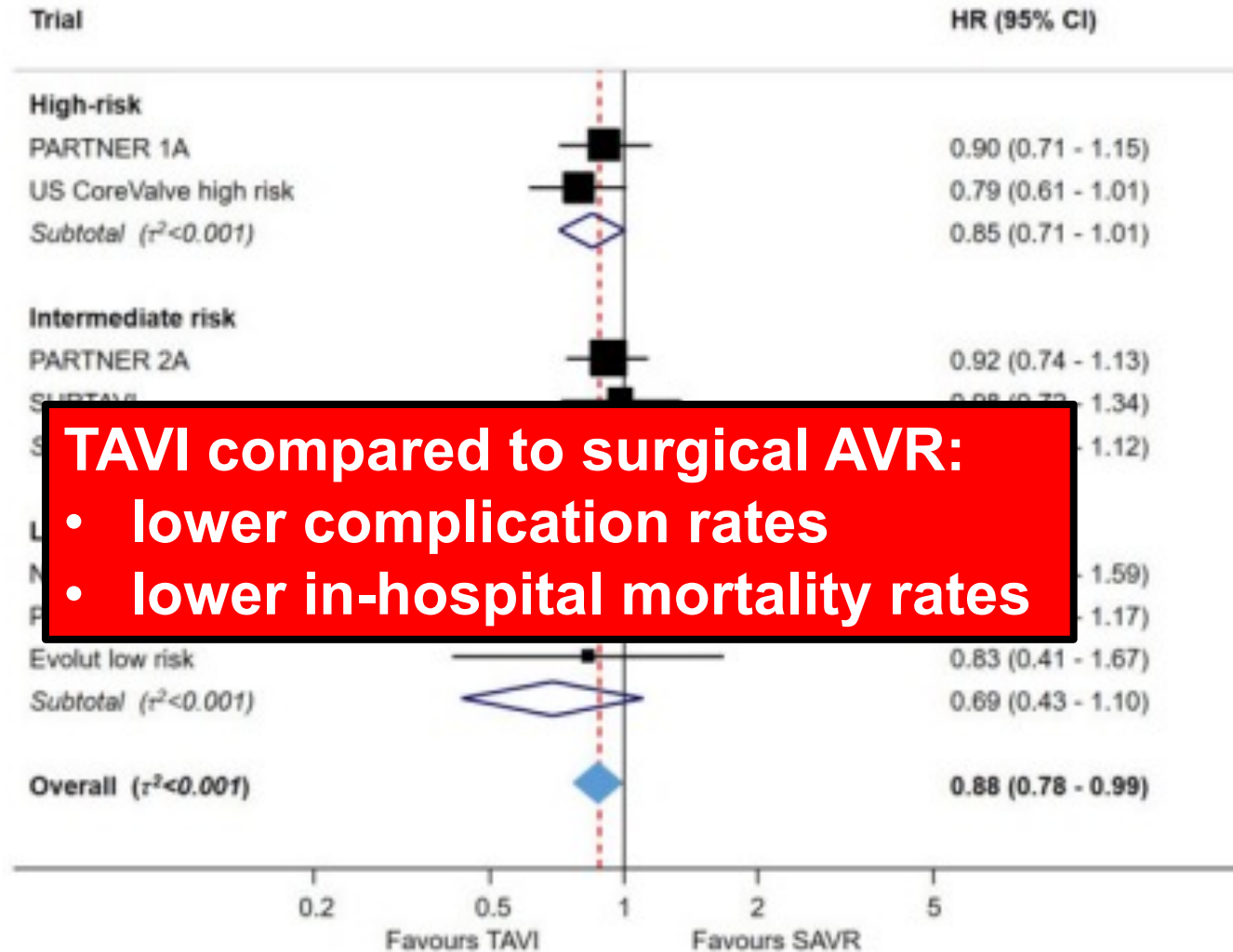
Otto CM et al. J Am Coll Cardiol 2021;77:e25-e197
Vahanian A et al. Eur Heart J 2022;43:561-632
McDonagh TA et al. Eur Heart J 2021;42:3599-726
Heidenreich PA et al. Circulation 2022;145:e895-1032

Stenosi aortica e insufficienza cardiaca

Con l'invecchiamento aumenta la prevalenza del HF e SA



Possibilità della TAVI precoce?



TAVI compared to surgical AVR:

- lower complication rates
- lower in-hospital mortality rates

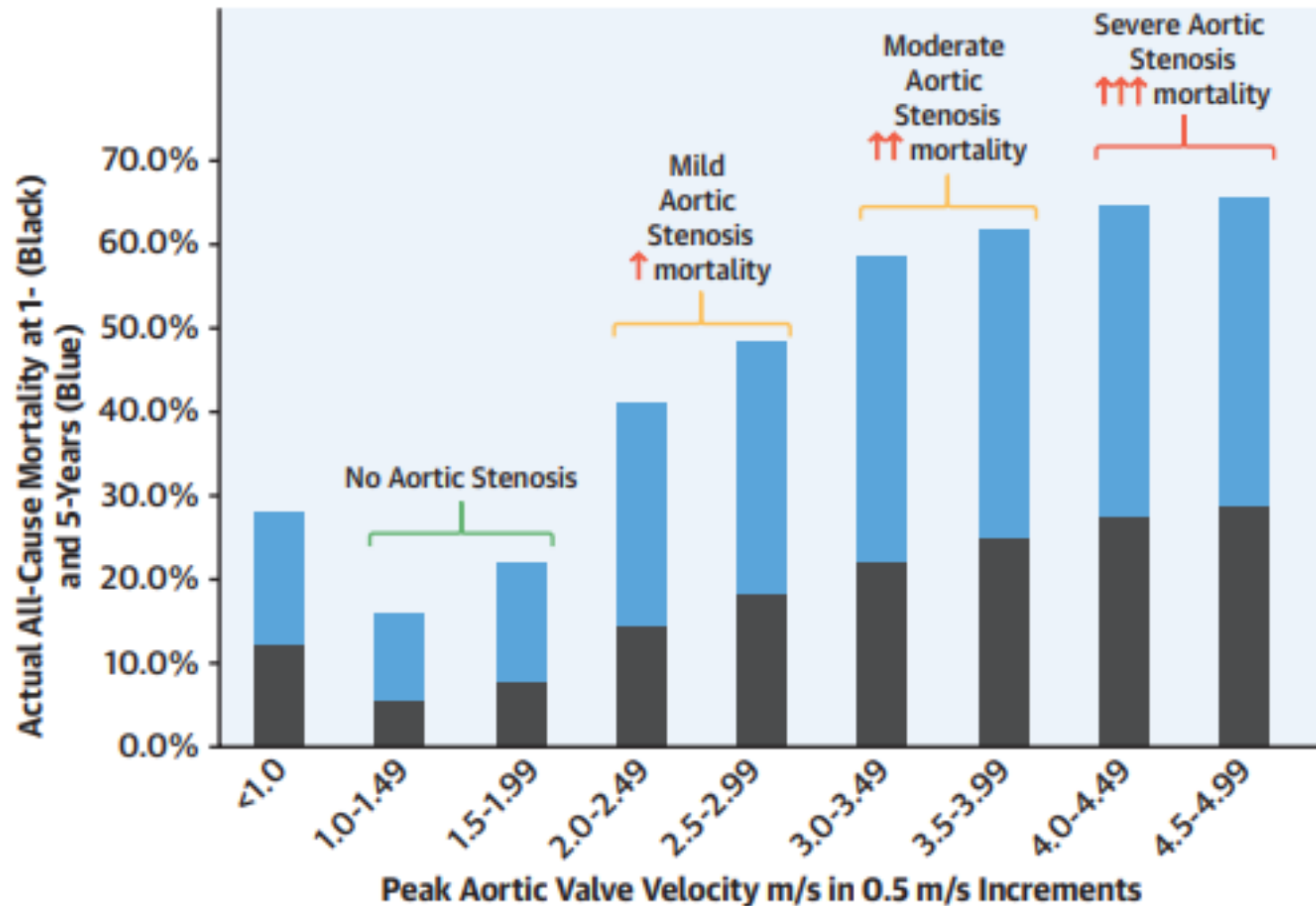
RAZIONALE:

TAVI nella stenosi aortica moderata e ventricolo disfunzionante

- **Regressione delle conseguenze emodinamiche dell'aumentato carico pressorio.**
- **TAVI procedura relativamente sicura.**

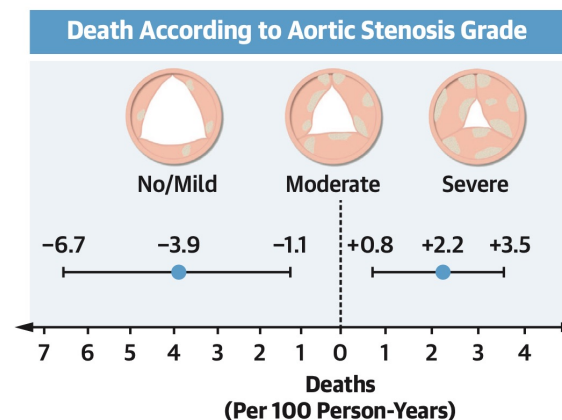
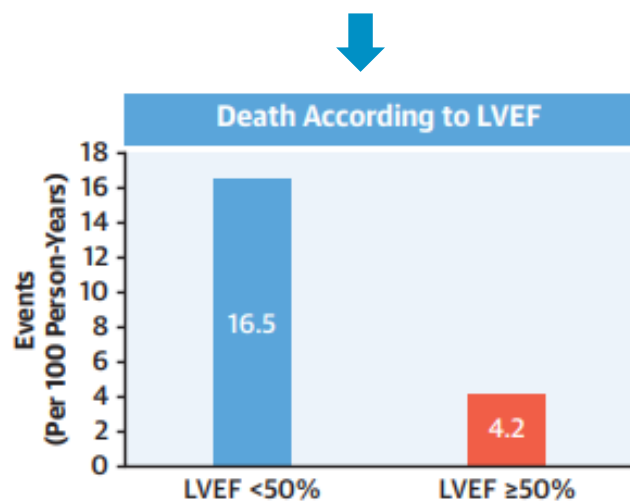
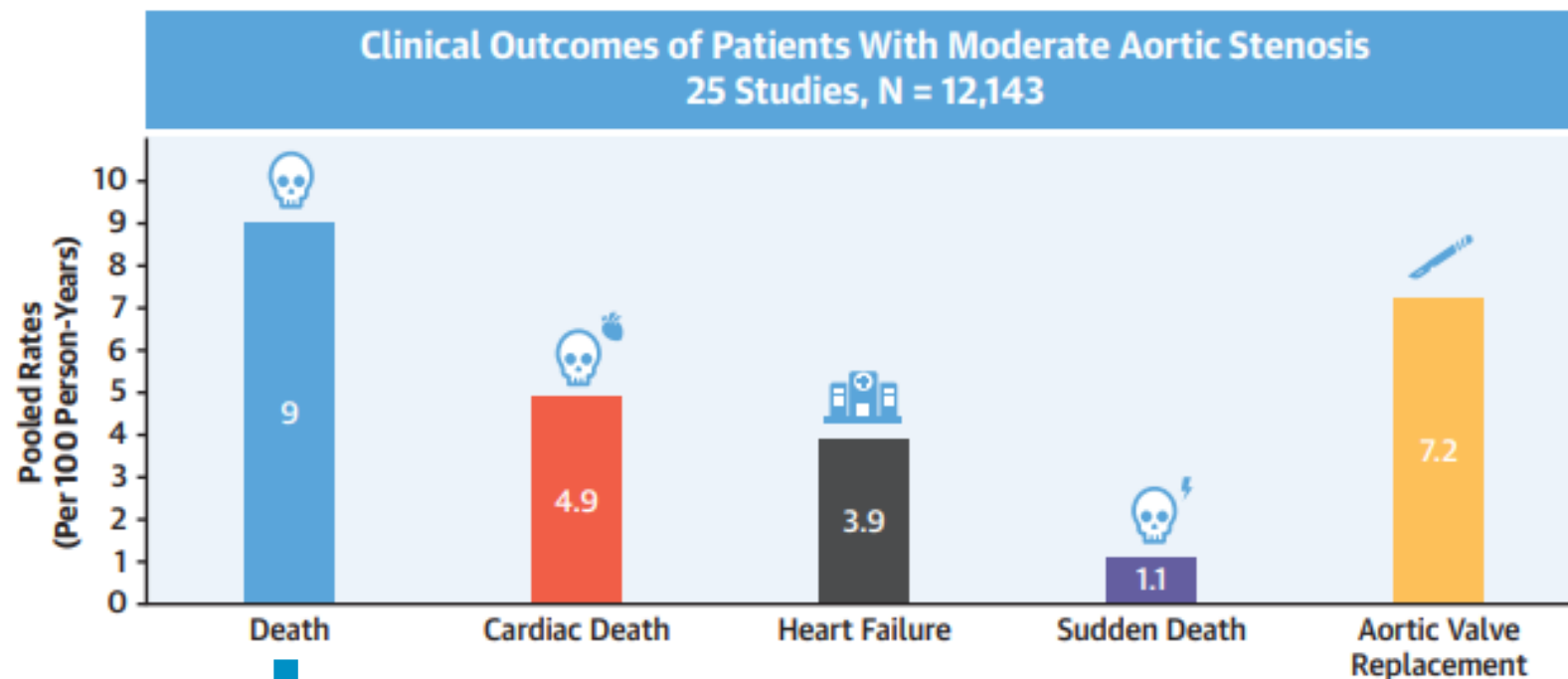
Prognosi della stenosi aortica moderata

NEDA echocardiographic registry (n° 122.809)



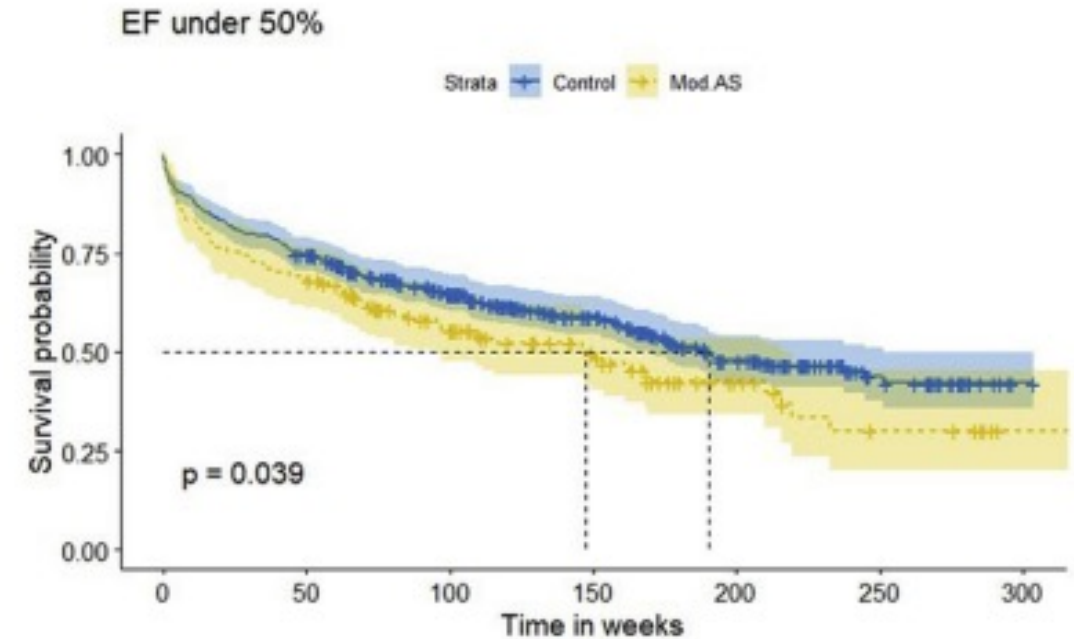
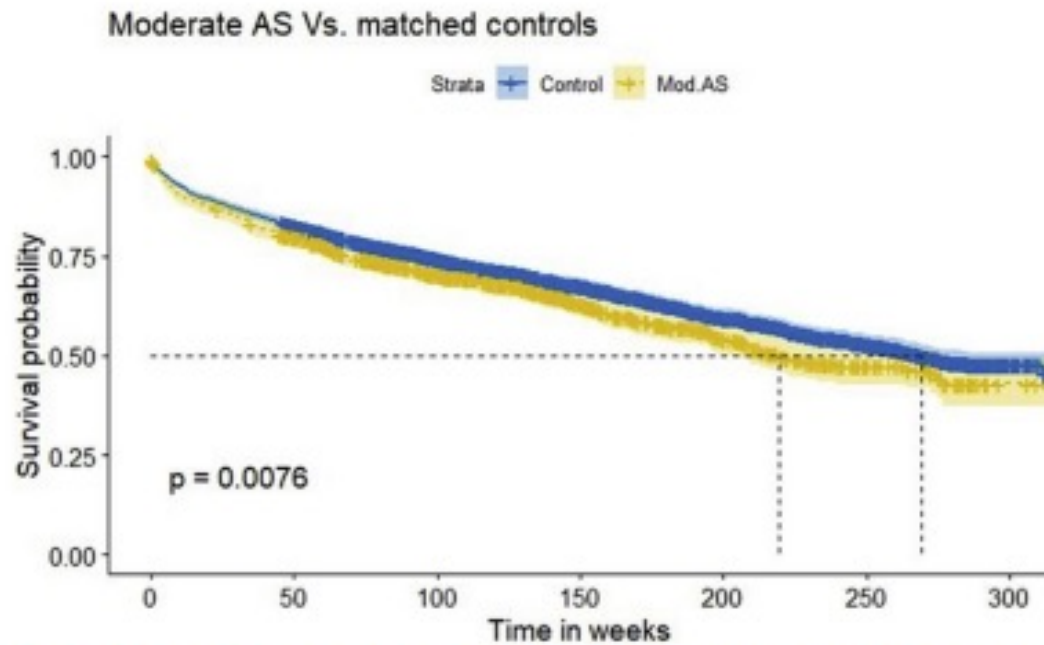
Strange G et al. J Am Coll Cardiol 2019;74:1851-1863

Prognosi della stenosi aortica moderata



Prognosi della Stenosi aortica moderata e LVEF<50%

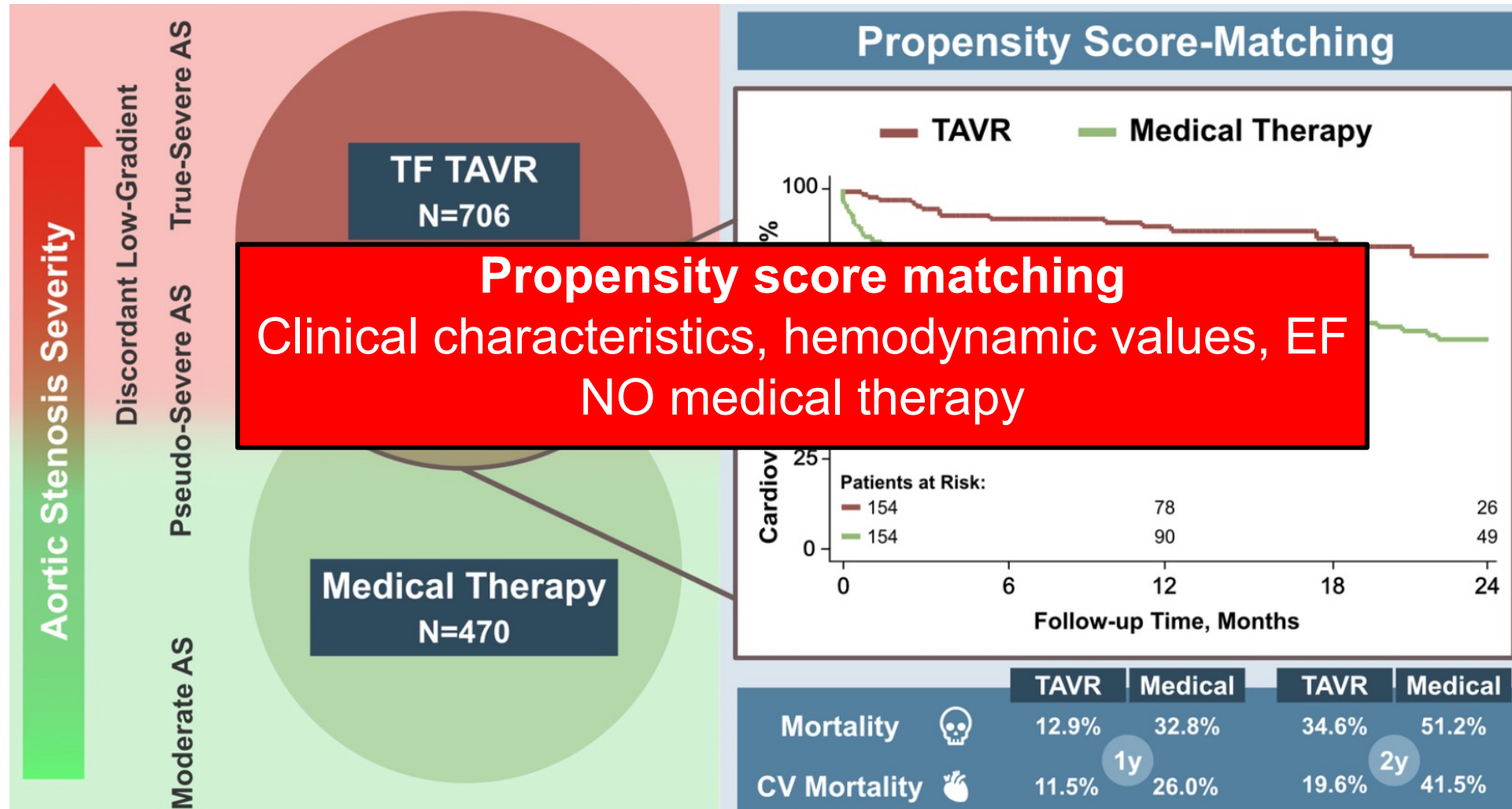
952 patients with LVEF<50% and moderate AS matched with a corresponding group without AS



- Low HF prevalence (<10%)
- Patients who underwent AVR not be adequately matched.

ATLAS TAVI Registry

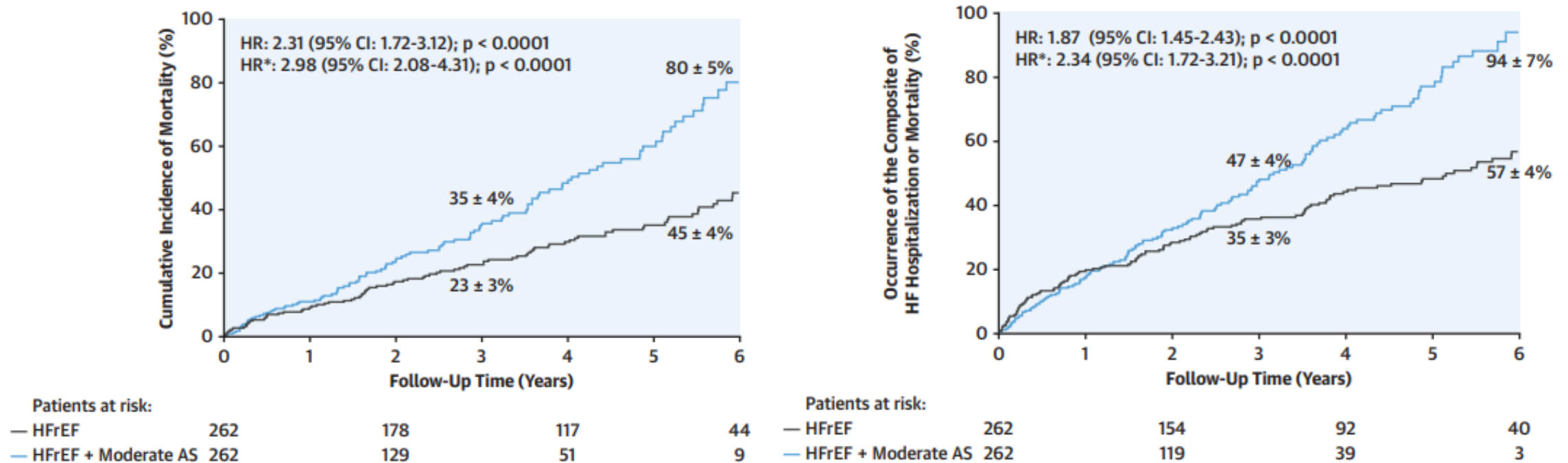
TAVI in patients with reduced LVEF and Non-Severe AS



Ludwig S et al. Circ Cardiovasc Interv 2023;16:e012768

Prognosi Stenosi aortica moderata e HFrEF

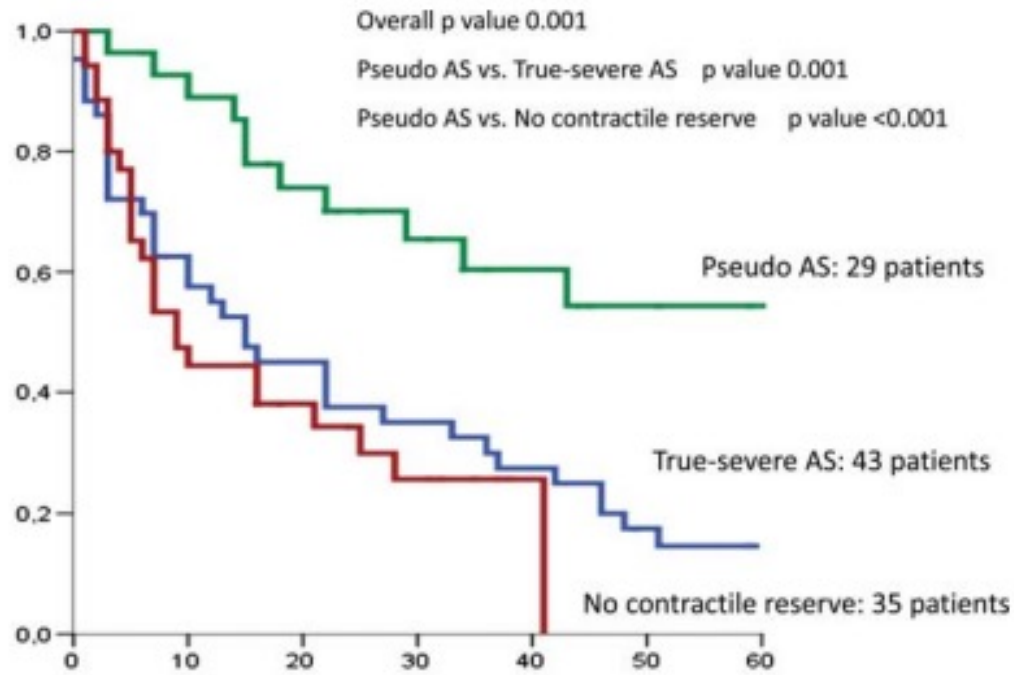
262 patients with HFrEF and moderate AS matched with a corresponding group without AS



- 44 patients with baseline moderate AS required AVR during follow-up, but TAVI was performed in only 15 patients.
- Patients who underwent AVR not be adequately matched.
- HF treatment was not optimal and did not include new HF therapies

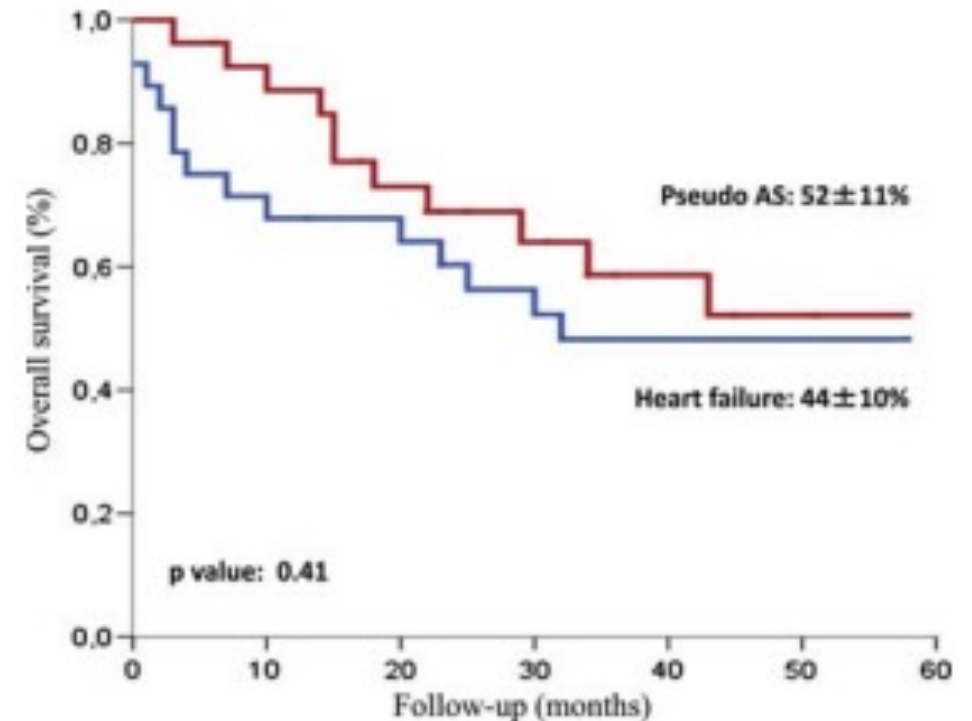
Prognosi Stenosi aortica moderata e HFrEF

107 patients with moderate AS matched with a corresponding severe AS



Patients at risk

True-severe AS	43	24	18	14	11	6	4
Pseudo AS	29	25	19	14	10	7	5
No contractile reserve	35	15	10	6	1	0	0



28 HFrEF patients with moderate AS matched with
28 HFrEF patients without AS

Limitazioni degli studi

- Studi retrospettivi
- Numero limitato di pazienti
- Terapia medica non ottimizzata
- Popolazione non “matched” per terapia

RCTS in corso

TAVR UNLOAD

300 patients with symptomatic moderate AS to TAVI versus medical therapy. The results expected in February 2025.

PROGRESS Trial

750 patients with symptomatic moderate AS to TAVI versus medical therapy. The results expected in June 2029.

Evolut EXPAND TAVR II Pivotal Trial

650 patients with symptomatic moderate AS to TAVI versus medical therapy. The results expected in February 2026.

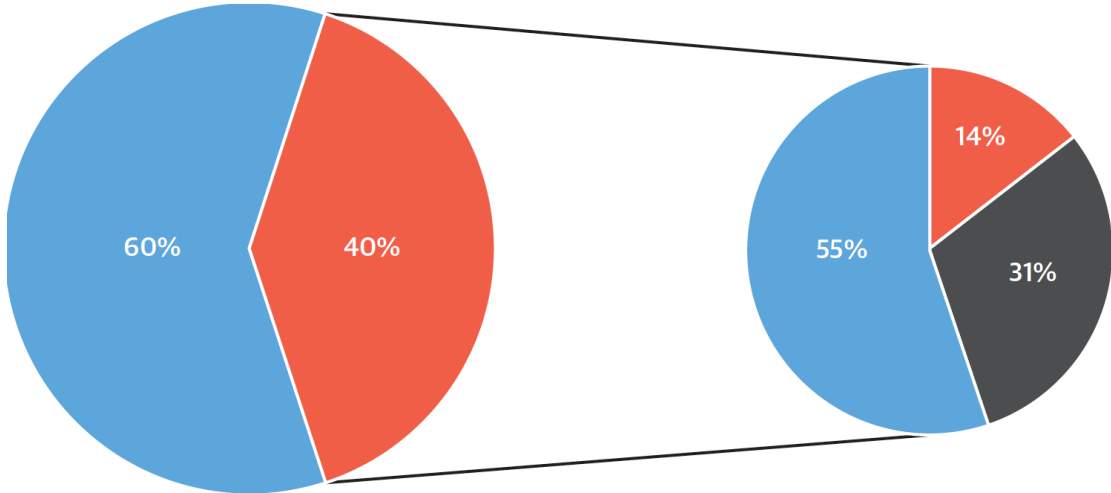
Significato dei RCTs in corso su SA moderata e HFrEF

- **Razionale fisiopatologico** della TAVI nella SA moderata sia **ragionevole**.
- Valutare se la TAVI è associata ad una **regressione delle conseguenze emodinamiche** dell'aumentato sovraccarico pressorio.
- Conoscere il potenziale **beneficio in termini di sopravvivenza** della TAVI nei pazienti con SA moderata
- Rischio di impianto di **pacemaker** e della presenza di un **leak paravalvolare**

Prevalence and Prognostic Implications of Discordant Grading and Flow-Gradient Patterns in Moderate Aortic Stenosis



Jan Stassen, MD,^{a,b} See Hooi Ewe, MD, PhD,^c Gurpreet K. Singh, MD,^a Steele C. Butcher, MD, MPhil,^{a,d} Kensuke Hirasawa, MD, PhD,^a Mohammed R. Amanullah, MD,^c Stephan M. Pio, MD,^a Kenny Y.K. Sin, MD,^c Zee P. Ding, MD,^c Ching-Hui Sia, MD,^e Nicholas W.S. Chew, MD,^e William K.F. Kong, MD, PhD,^e Kian Keong Poh, MD,^e Martin B. Leon, MD, PhD,^f Philippe Pibarot, DVM, PhD,^g Victoria Delgado, MD, PhD,^a Nina Ajmone Marsan, MD, PhD,^a Jeroen J. Bax, MD, PhD^{a,h,i}



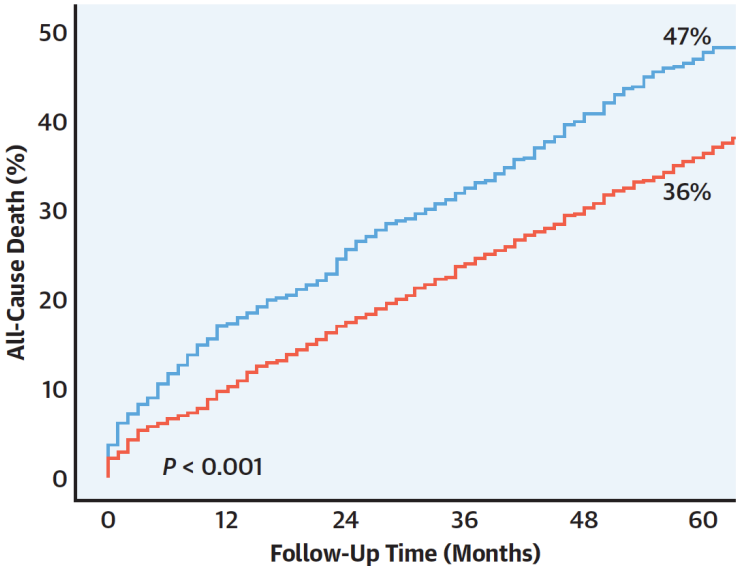
- Concordant MAS
- Discordant MAS
- Normal-Flow, Low-Gradient, Discordant MAS
- Paradoxical Low-Flow, Low-Gradient, Discordant MAS
- Classical Low-Flow, Low-Gradient, Discordant MAS

Concordant moderate AS: both AVA and gradient are moderate

Discordant moderate AS: moderate AVA but with mild gradient

Moderate SA

AVA (1.0-1.5 cm²),
transvalvular mean gradient (MG) (20-40 mm Hg),
peak aortic jet velocity (3.0-4.0 m/s).



Number at risk						
Discordant MAS (MG <20 mm Hg)	788	637	522	439	341	244
Concordant MAS (MG ≥20 mm Hg)	1,186	1,058	939	825	685	556

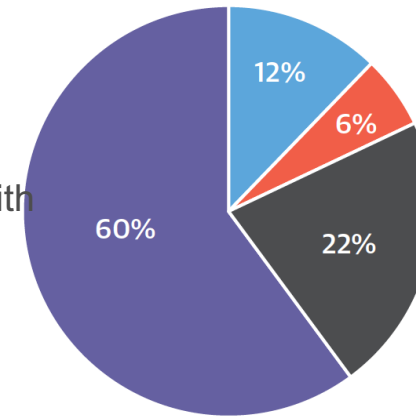
Prevalence and Prognostic implication of flow-gradient in moderate AS

A

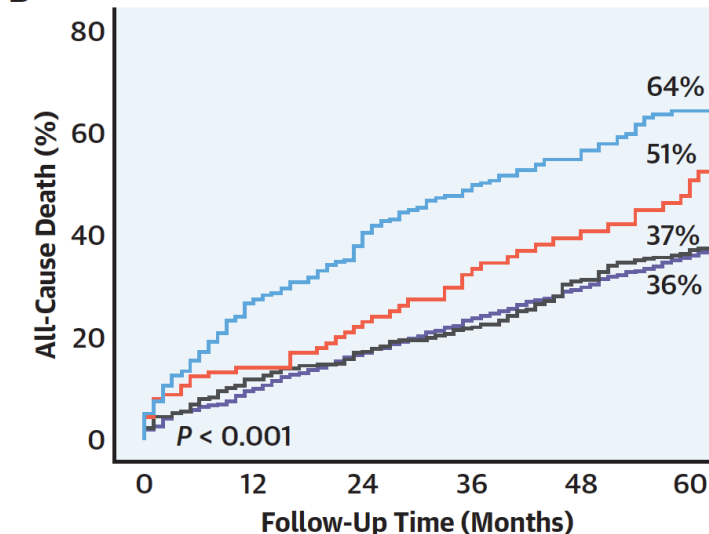
B

Discordant moderate AS: moderate AVA but with mild gradient

- “**classical**” **low-flow, low-gradient AS** (low-flow, low-gradient AS with reduced LVEF)
- “**paradoxical**” **low-flow, low-gradient AS** (low-flow, low-gradient AS with preserved LVEF)
- **normal-flow, low-gradient AS**



- Classical Low-Flow, Low-Gradient, Discordant MAS
- Paradoxical Low-Flow, Low-Gradient, Discordant MAS
- Normal-Flow, Low-Gradient, Discordant MAS
- Concordant MAS



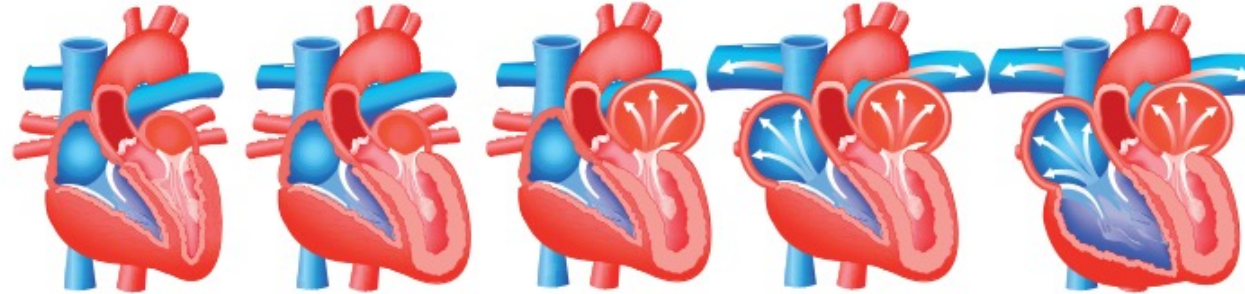
Number at risk

—	1,186	1,058	939	825	685	556
—	433	369	317	283	224	165
—	114	94	72	55	45	30
—	241	174	133	101	72	49

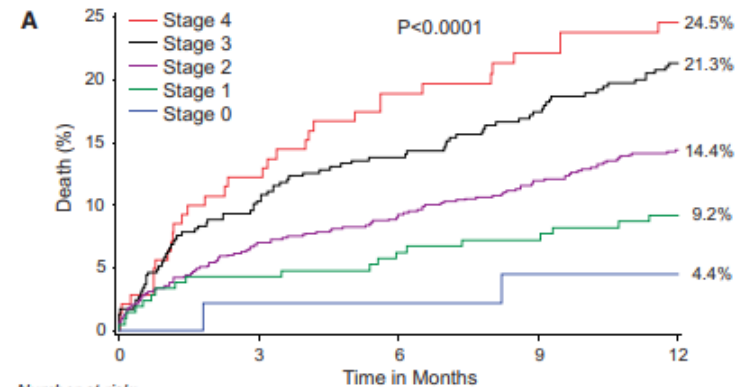
TABLE 4 Cox Regression Analysis for Different Flow-Gradient Patterns

	All-Cause Mortality			
	Univariable Analysis		Multivariable Analysis ^a	
	HR (95% CI)	P Value	HR (95% CI)	P Value
Concordant MAS	Reference group		Reference group	
Normal-flow, low-gradient, discordant MAS	1.023 (0.857-1.222)	0.797	1.122 (0.946-1.332)	0.186
“Paradoxical” low-flow, low-gradient, discordant MAS	1.528 (1.157-2.020)	0.003	1.458 (1.072-1.983)	0.014
“Classical” low-flow, low-gradient, discordant MAS	2.224 (1.849-2.675)	<0.001	1.710 (1.270-2.303)	<0.001

Storia naturale della stenosi aortica: il danno cardiaco



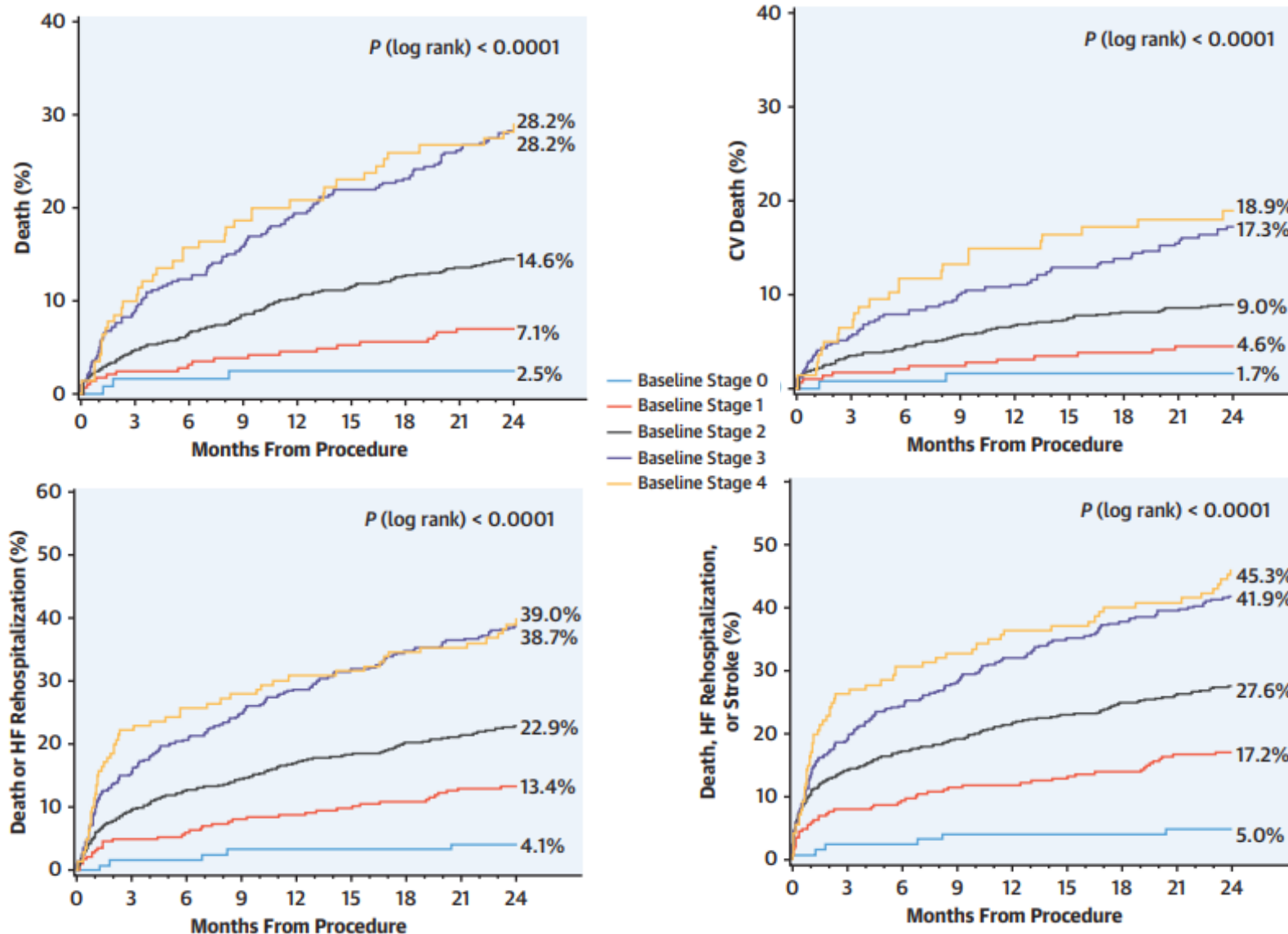
Stages/Criteria	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4
	No Cardiac Damage	LV Damage	LA or Mitral Damage	Pulmonary Vasculature or Tricuspid Damage	RV Damage
Echocardiogram		Increased LV Mass Index >115 g/m ² (Male) >95 g/m ² (Female)	Indexed left atrial volume >34mL/m ²	Systolic Pulmonary hypertension ≥60 mmHg	Moderate-Severe right ventricular dysfunction
		E/e' >14	Moderate-Severe mitral regurgitation	Moderate-Severe tricuspid regurgitation	
		LV Ejection Fraction <50%	Atrial Fibrillation		



Number at risk:

Stage 4	145	118	108	96	93
Stage 3	413	360	337	320	303
Stage 2	844	755	720	679	652
Stage 1	212	199	195	186	180
Stage 0	47	45	45	42	42

Prognosi della stenosi aortica moderata



Généreux P et al. J Am Coll Cardiol 2022;80:783-800

Take home messages

- Ad oggi il **ruolo prognostico indipendente** della SA moderata nell'IC rimane poco chiaro, con alcuni risultati contrastanti in letteratura.
- I **trials clinici randomizzati** che sono in corso potranno aiutarci a capire la validità prognostica della TAVI nella SA moderata con disfunzione del VSX.
- Altri dati importanti riguarderanno il ruolo del **danno cardiaco** associato e il possibile differente risultato in pazienti con SA e “**classical**” o “**paradoxical**”. **low-flow, low-gradient**.
- Il trattamento tempestivo delle **comorbilità** (es. ipertensione arteriosa), che di solito si osservano in questi pazienti, è fondamentale in quanto potrebbero agire autonomamente come fattori causale.
- Importanza della implementazione e titolazione della **terapia medica ottimale**.

TAVI in moderate aortic stenosis and heart failure: pros and cons

Modified from:

EuroIntervention 2022;18:787-789

Victoria Delgado^{1,2*}, MD, PhD; Paolo Manca³, MD; Michele Senni^{3,4**}, MD, PhD

Possible flow-chart in the treatment of patients with heart failure and moderate aortic stenosis

HF and moderate AS



Recognise and promptly treat comorbidities

Optimise HF medical treatment according to guidelines



TAVI maybe considered?



NO

RCTS in corso

TAVR UNLOAD

300 patients with symptomatic moderate AS to TAVI versus medical therapy. The results expected in February 2025.

PROGRESS Trial

750 patients with symptomatic moderate AS to TAVI versus medical therapy. The results expected in June 2029.

Evolut EXPAND TAVR II Pivotal Trial

650 patients with symptomatic moderate AS to TAVI versus medical therapy. The results expected in February 2026.

