Low-Flow Low-Gradient Severe Aortic Stenosis

How low is too low to treat?

Matthew Czarny, MD

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Disclosure of Relevant Financial Relationships

Within the prior 24 months, I have had a financial relationship with a company producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients:

Nature of Financial Relationship	Ineligible Company
Grant/Research Support	Medtronic, Edwards Lifesciences, Abbott, MedAlliance, Cordis
Consultant Fees/Honoraria	Medtronic

All relevant financial relationships have been mitigated.
Faculty disclosure information can be found on the app

Low-Flow Low-Gradient Severe AS

- 30-45% of patients undergoing TAVR

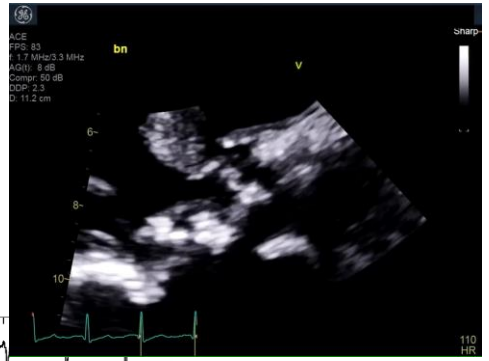
- AVA ≤1.0 cm^2, but MG <40 mmHg and PV <4.0 m/s
- Stroke volume index ≤35 ml/m^2
- Reduced LVEF ("classical") or preserved ("paradoxical")

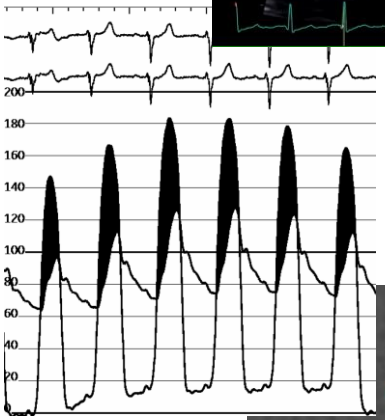
- Underrepresented in pivotal TAVR studies

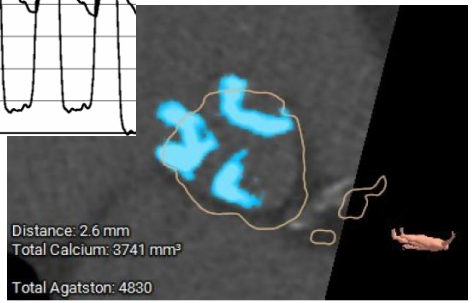
Diagnosis

- Transthoracic echo (+/- dobutamine)
- Transesophageal echo
- Right/left heart cath (+/- dobutamine)
- AV calcium score/CT planimetry
- Projected AVA

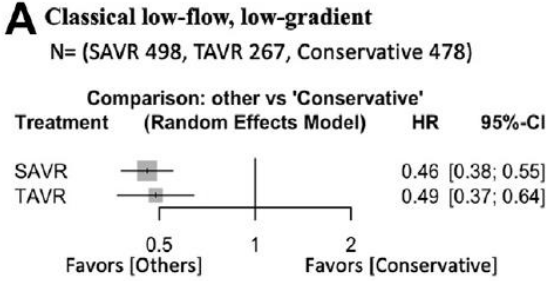
- Exclude other causes of symptoms

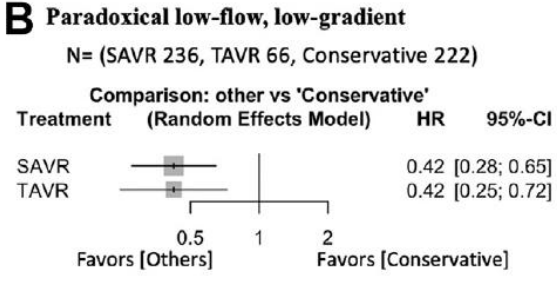


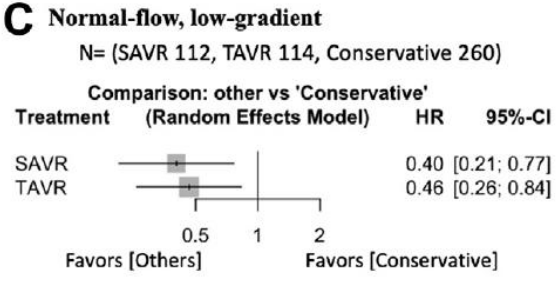




Do LF-LG Severe AS Patients Benefit from TAVR?

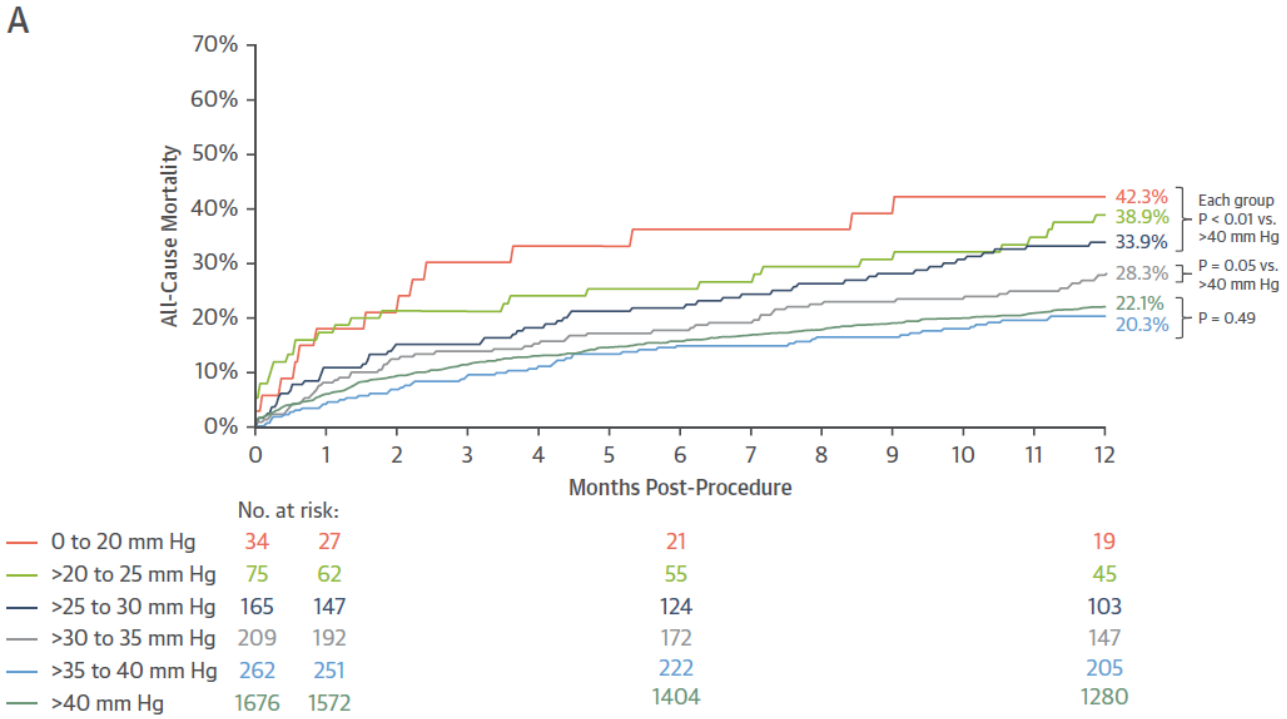






Ueyama *et al.* JACC Cardiovasc Interv. 2021;14(13):1481-1492.

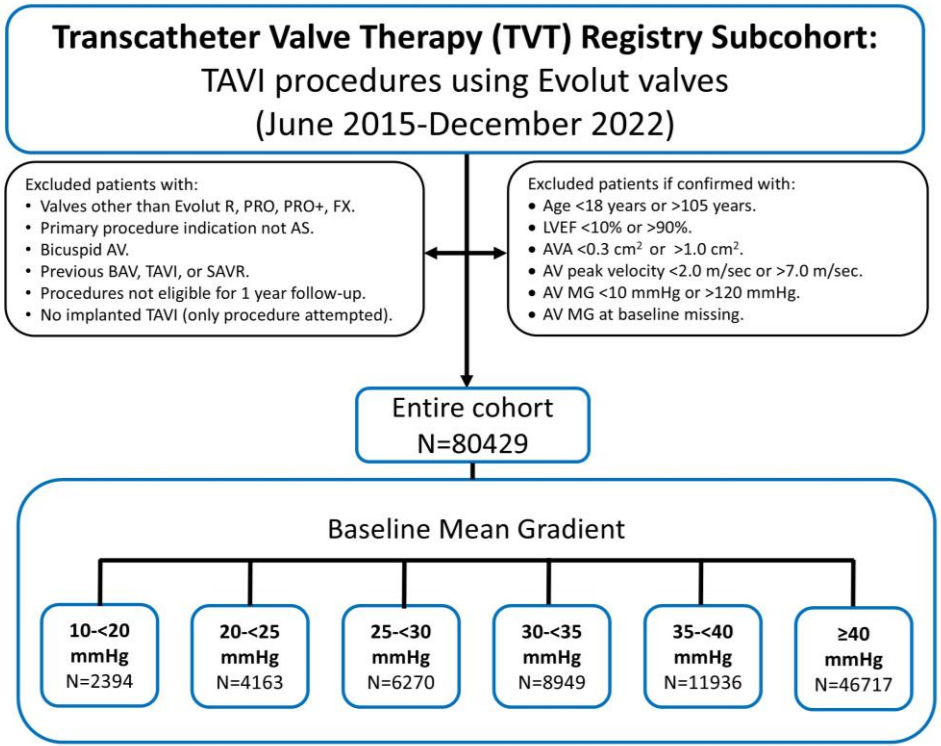
Do LF-LG Severe AS Patients Benefit from TAVR?



Chetcuti *et al.* JACC Cardiovasc Imaging. 2019;12(1):67-80.

TAVR for Severe AS by Baseline Resting Gradient

Patient flow

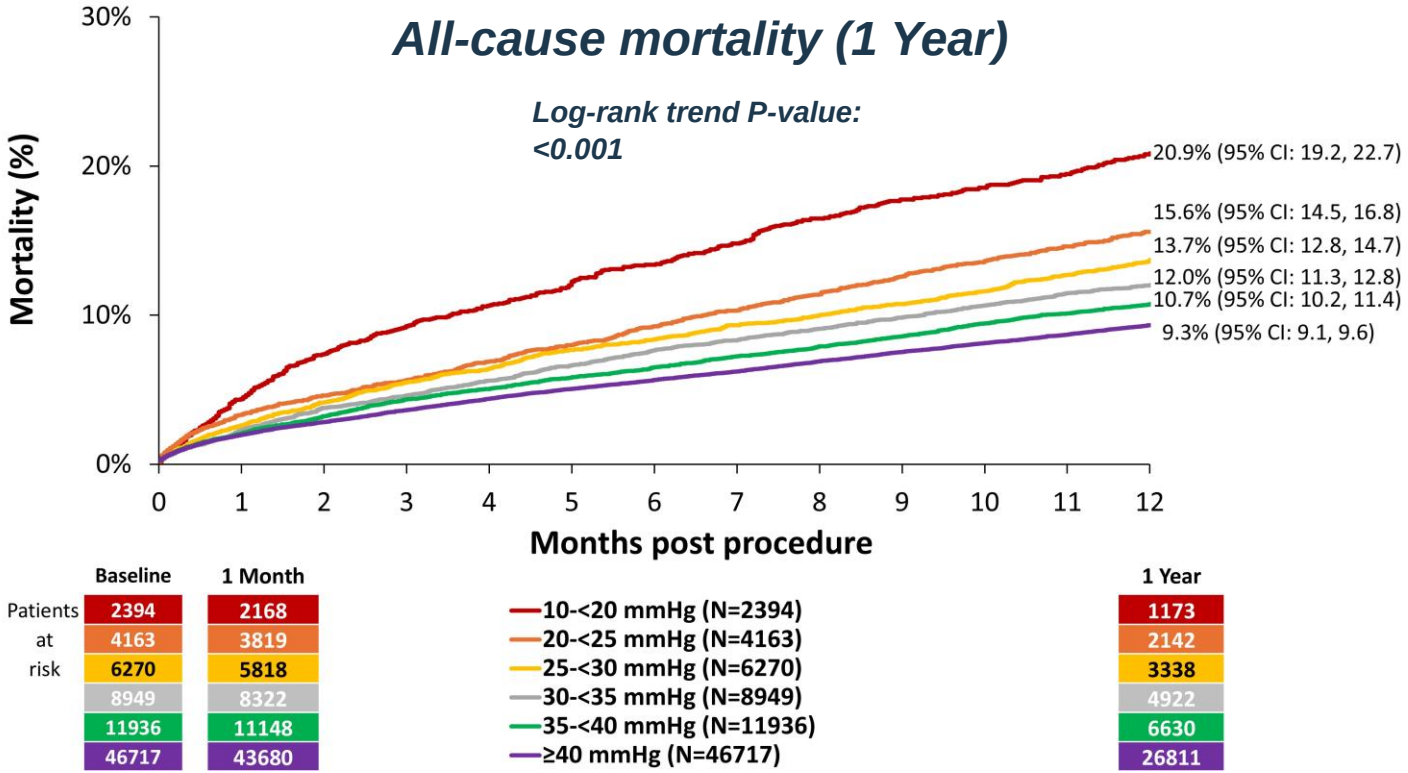


Baseline characteristics

Mean or %	Entire cohort (80429)	10-<20 mmHg (2394)	20-<25 mmHg (4163)
Age (years)	80.7	82.1	81.7
Female	53.9%	49.0%	48.5%
STS-PROM Score (%)	5.1	6.9	6.2
NYHA Class III/IV	67.1%	76.5%	74.1%
LVEF (%)	57.2	46.0	50.5
AVA (cm^2)	0.70	0.77	0.76
AV MG (mmHg)	42.3	16.3	22.2

Czarny, M. "TAVI outcomes for severe aortic stenosis according to baseline resting gradient." EuroPCR 2025.

All-cause mortality (1 Year)



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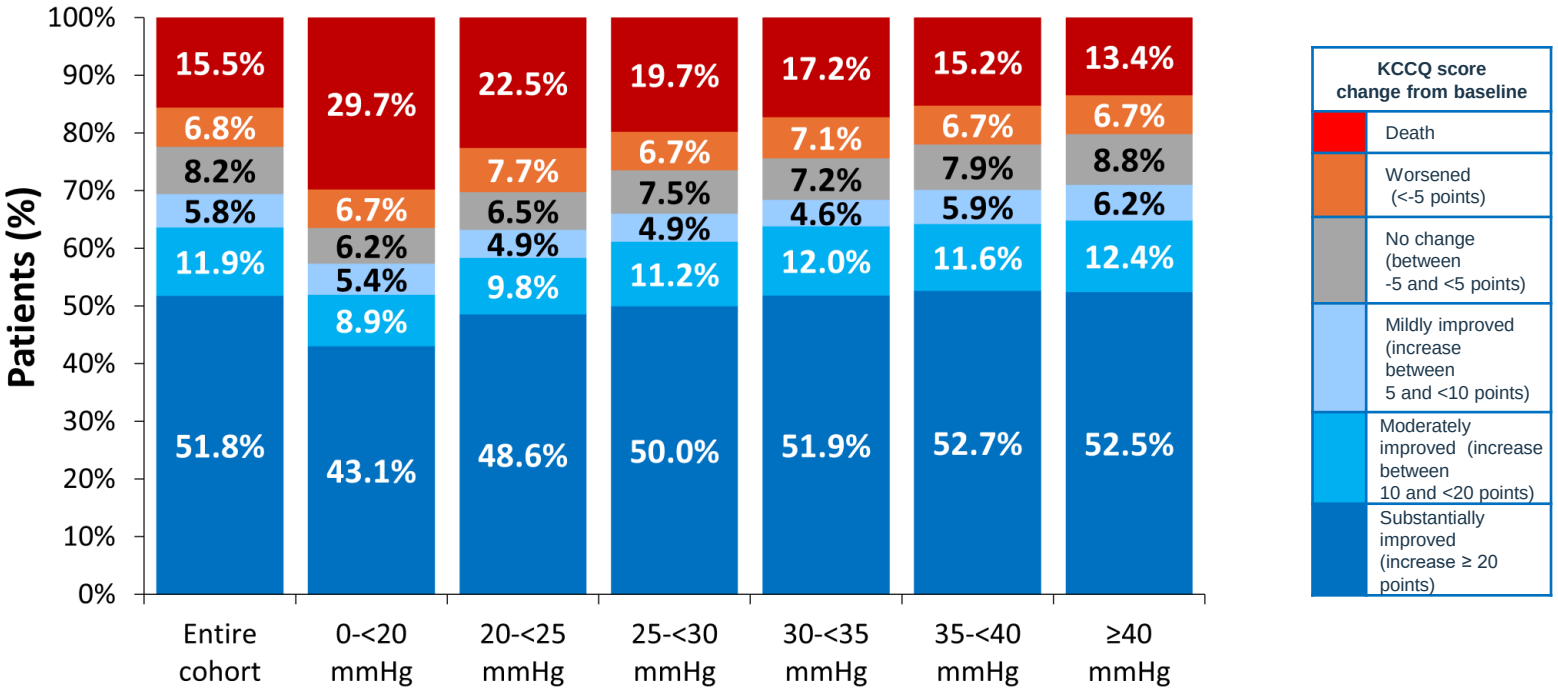
VARC-3 KCCQ ordinal outcome (1 Year)

Cochran-Mantel-Haenzel trend test (Nonzero Correlation)
P-value: < 0.001



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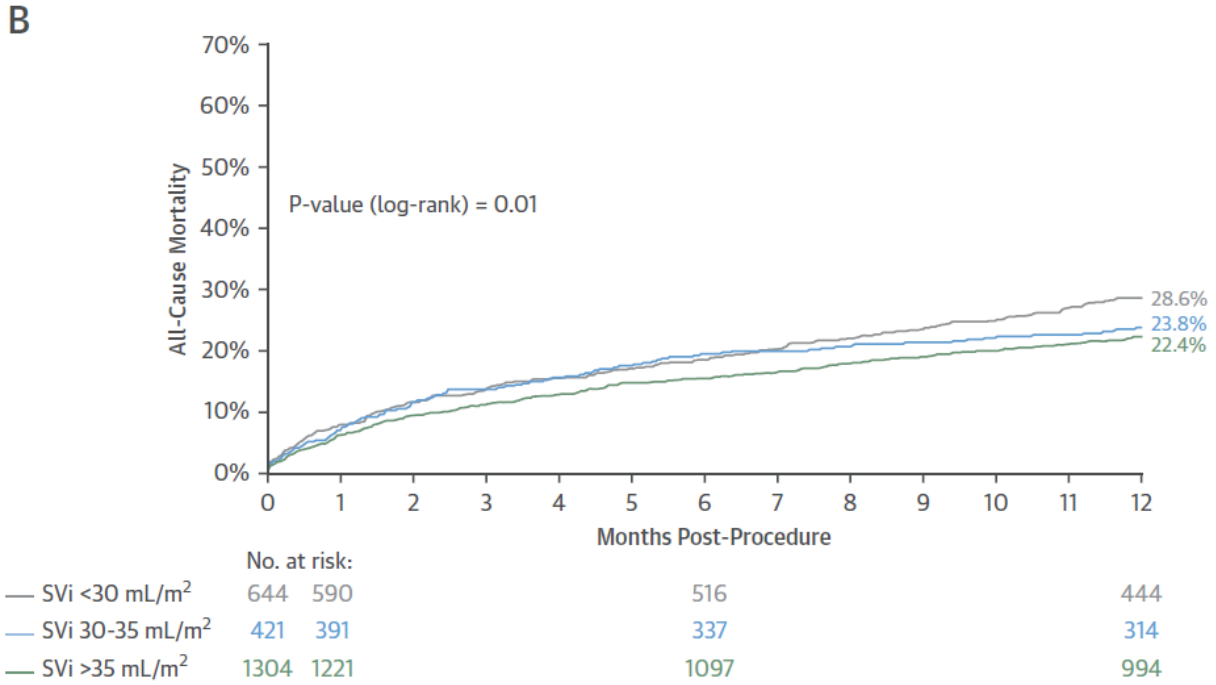
Does Flow Matter?



Only mean gradient was predictive of 1 year mortality

Chetcuti *et al.* JACC Cardiovasc Imaging. 2019;12(1):67-80.

Conclusions

- Severe AS with low resting MG is associated with 1-year all-cause mortality post-TAVR.
- *Most* of these patients have a *significant* QoL improvement regardless of resting MG.
- How low is too low? Be very cautious under *20 mmHg*.