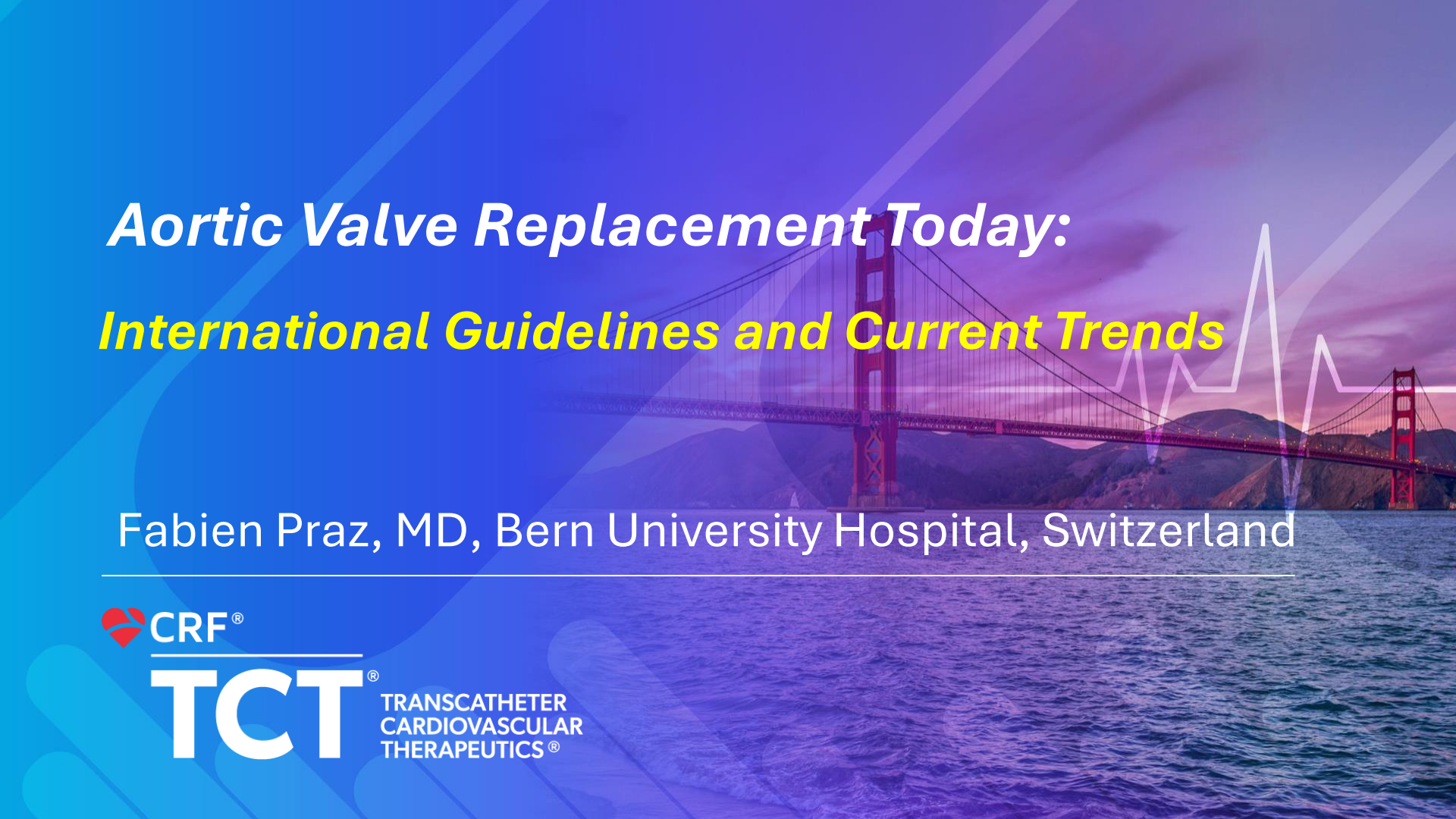
Aortic Valve Replacement Today:

International Guidelines and Current Trends

Fabien Praz, MD, Bern University Hospital, Switzerland



CRF®

TCT® TRANSCATHETER CARDIOVASCULAR THERAPEUTICS®

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:

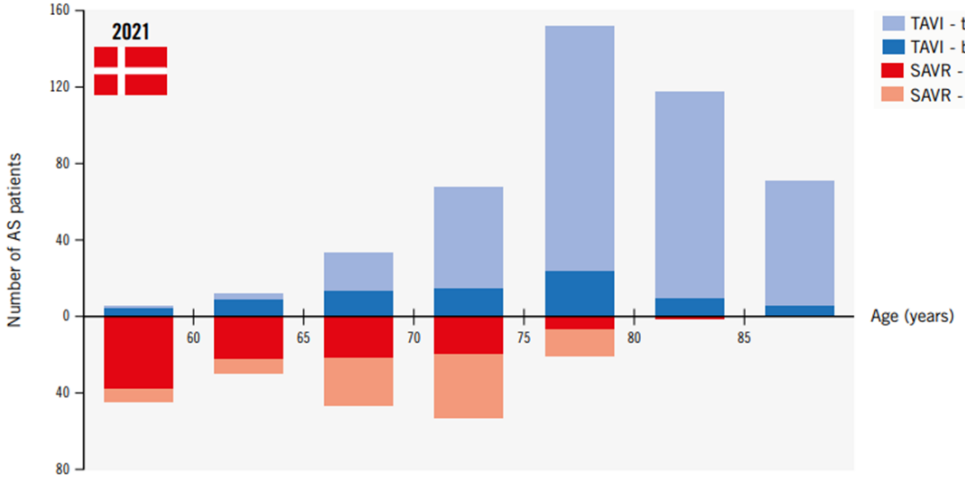
Nature of Financial Relationship	Ineligible Company
Grant/Research Support	Abbott Vascular
Travel expenses	Edwards Lifesciences, Abbott Vascular, Medira, Siemens Healthineers and InQB8 Medical Technologies

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

Trend 1 – Expansion of TAVR Indication and Procedural Optimization

Transatlantic Comparison of TAVR Indication

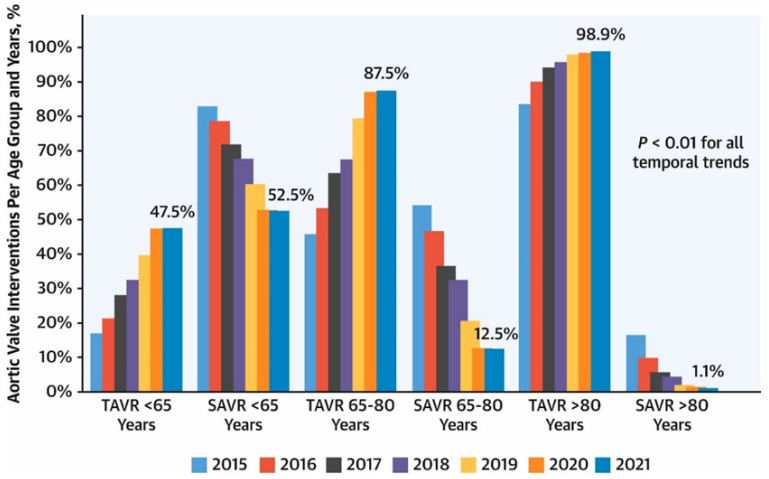
Europe



18% of patients <65y had TAVI in 2021

Wang X et al. EuroIntervention 2024 Jan 15;20(2):e158–e167

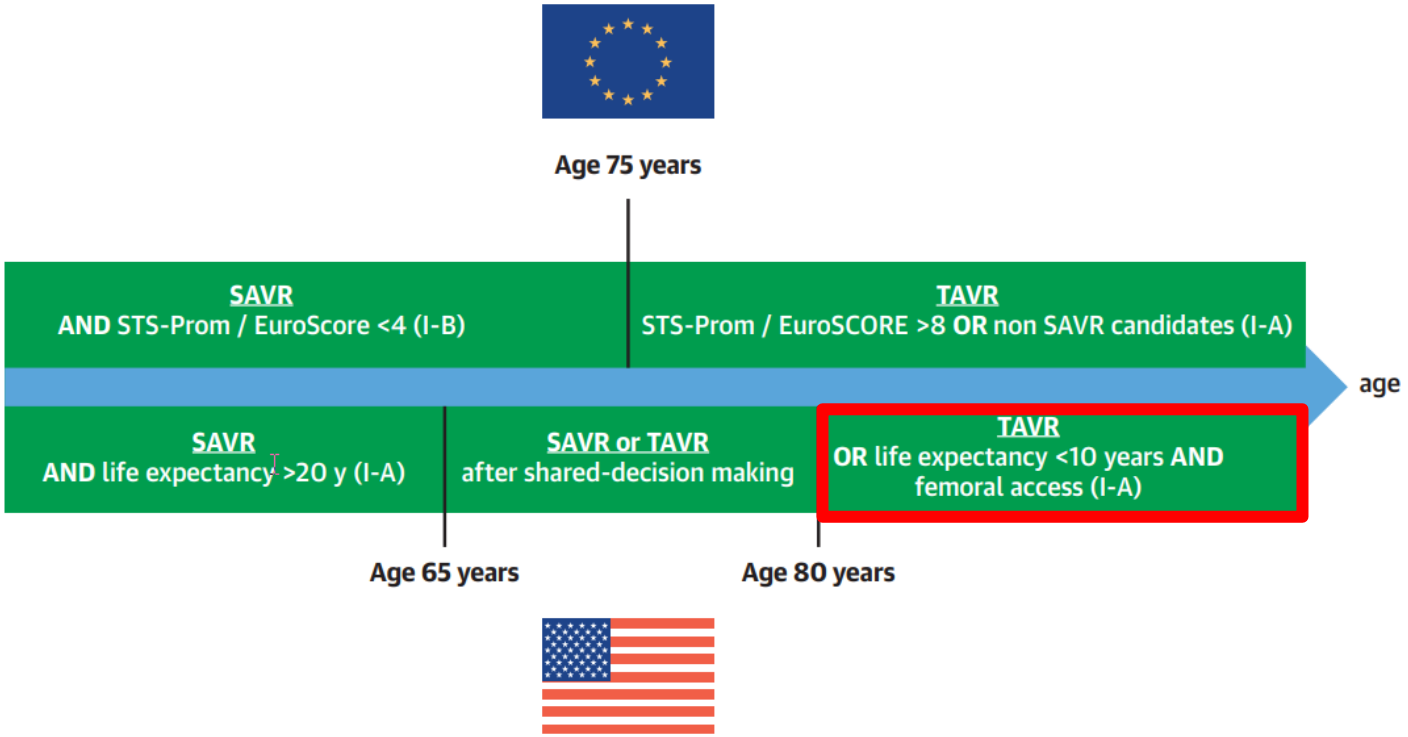
USA



Almost 50% of patients <65y received TAVI in 2021!

Sharma et al. J Am Coll Cardiol 2022; 80(21):2054-2056

Europe vs. US Guideline Comparison



Coisne A et al. J Am Coll Cardiol. 2023 Aug 22;82(8):721-734

Mode of Intervention in Patients with Severe AS

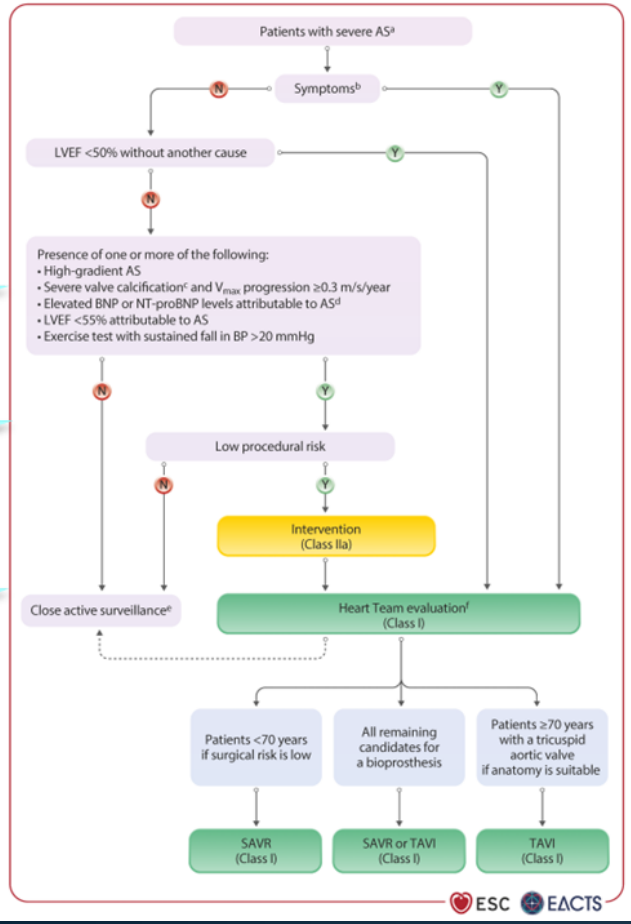
irrespective of the surgical risk score

Recommendations	Class	Level
TAVI is recommended in patients ≥70 years of age with tricuspid AV stenosis, if the anatomy is suitable.	I	A
SAVR is recommended in patients <70 years of age, if the surgical risk is low.	I	B
SAVR or TAVI are recommended for all remaining candidates for an aortic BHV according to Heart Team assessment.	I	B

REV.

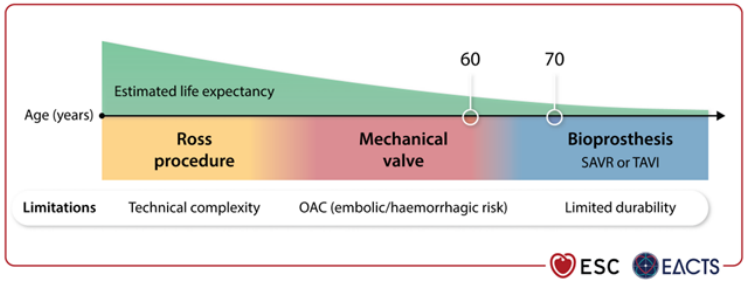
REV.

REV.

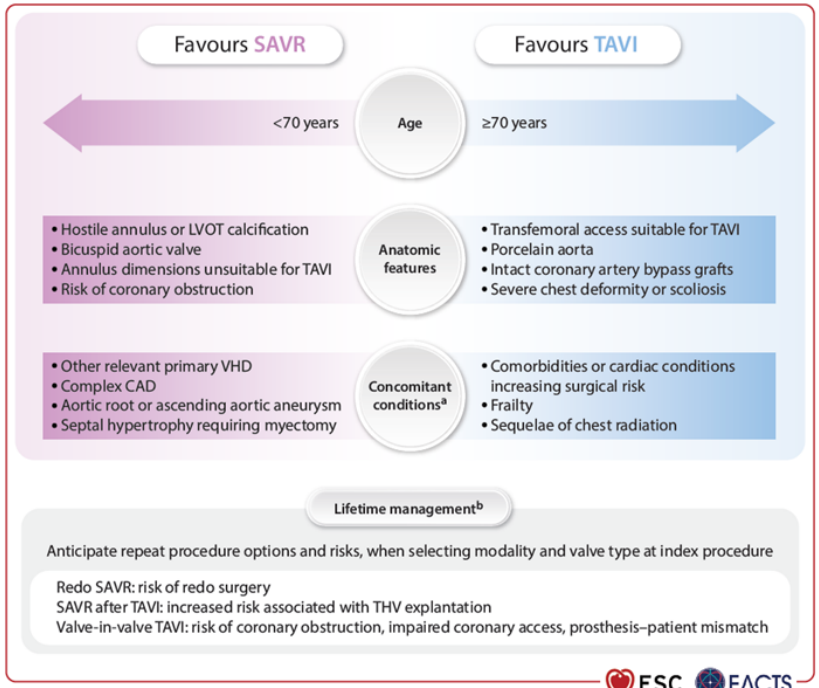


Praz F, Borger MA, Lanz J, et al., *Eur Heart J. 2025 Aug 29:ehaf194.*

Mode of Intervention in Patients with Severe AS



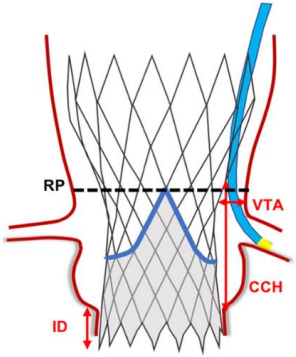
Recommendations	Class	Level
It is recommended that AV interventions are performed in Heart Valve Centres that report their local expertise and outcome data, have on-site interventional cardiology and cardiac surgical programmes, and a structured collaborative Heart Team.	I	C
It is recommended that the mode of intervention is based on Heart Team assessment of individual clinical, anatomical, and procedural characteristics, incorporating lifetime management considerations and estimated life expectancy.	I	C

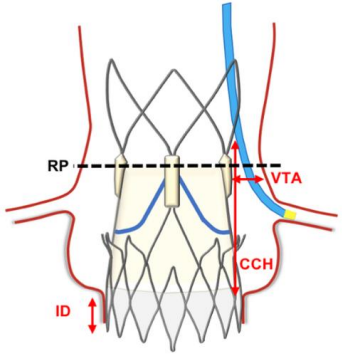


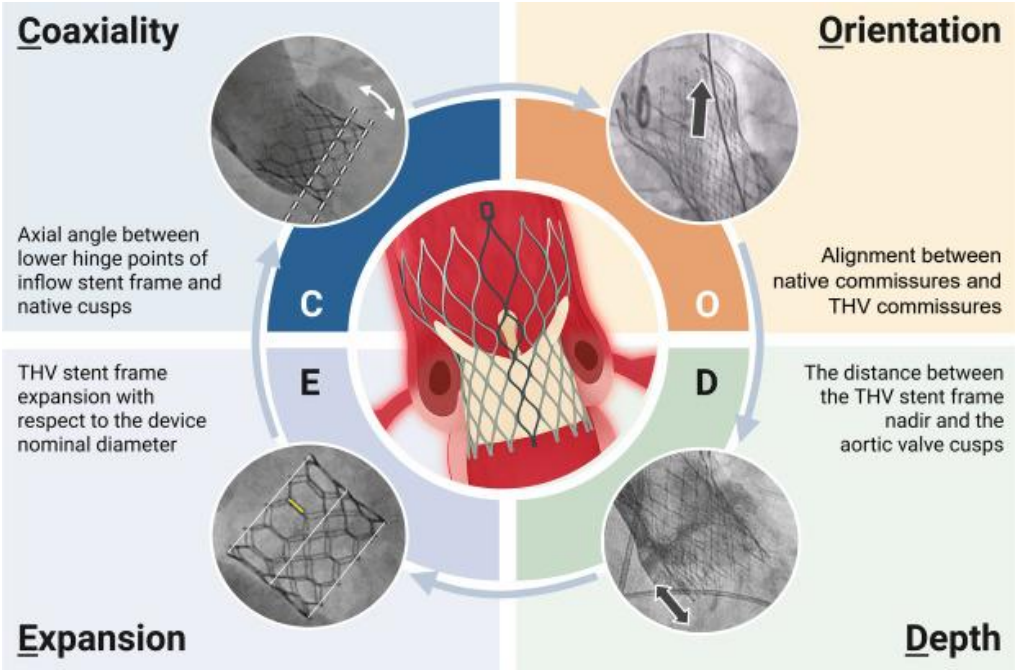
Praz F, Borger MA, Lanz J, et al., *Eur Heart J. 2025 Aug 29:ehaf194.*

TAVR Optimization

VALVE DESIGN FACILITATING CORONARY ACCESS

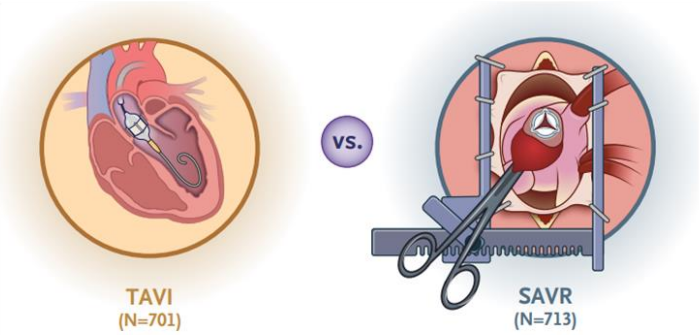


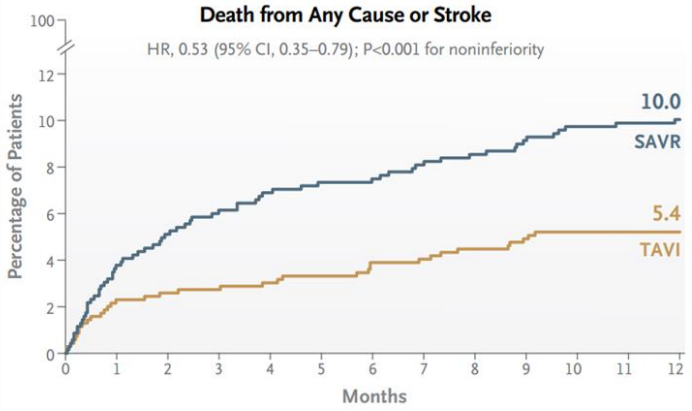


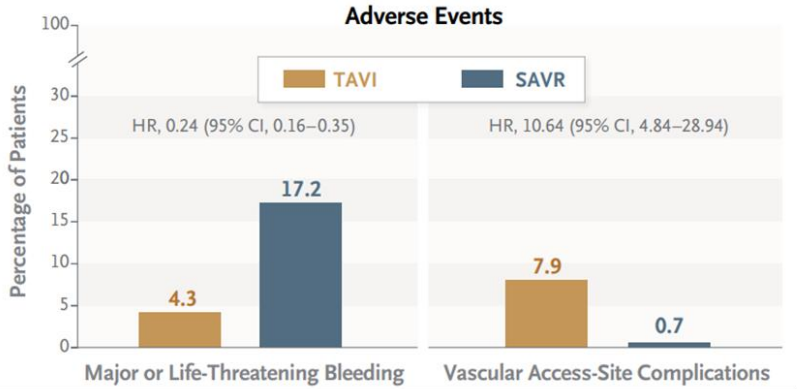


Angellotti D, Maznyczka A, Lanz J, Praz F, Pilgrim T. *JACC Adv. 2025 Oct;4(10 Pt 2):102181.*

Optimization – Lessons From the DEDICATE RCT







High reproducibillity of TAVI

Need for standardization of surgery

Interventions concentrated at experienced Heart Valve Centres

Blankenberg S at al. *N Engl J Med 2024;390:1572-1583*

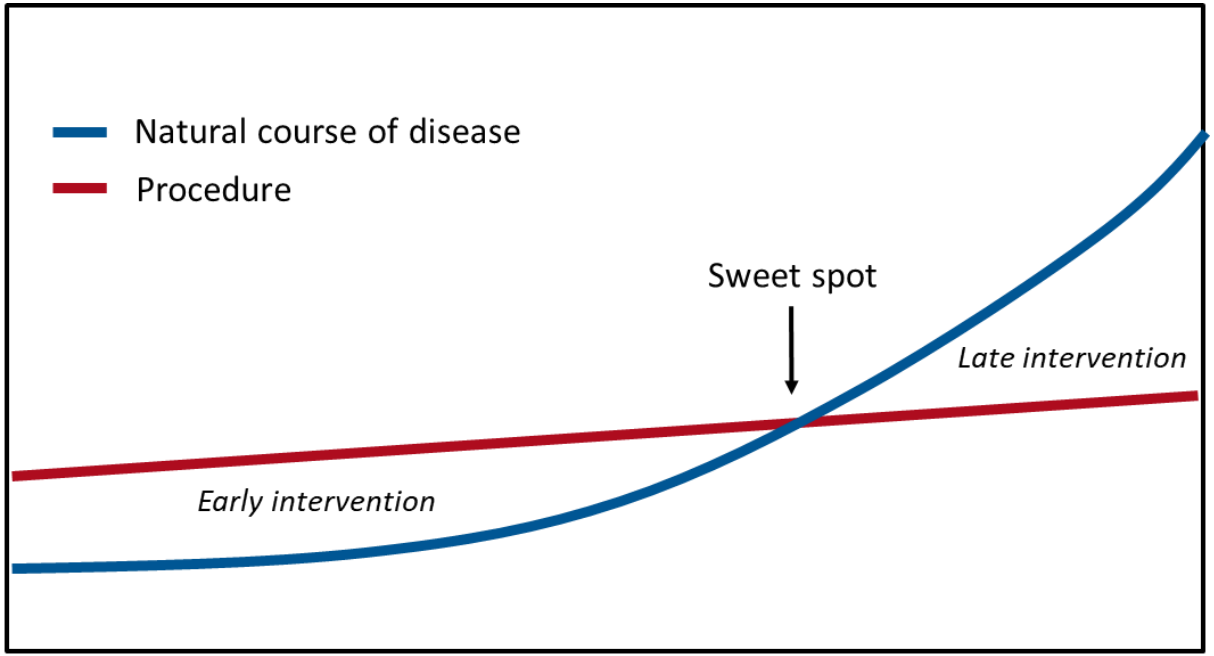
Intervention Optimization – What the Guidelines say

- ✓ Use of surgical and transcatheter valves **with proven long-term durability**
- ✓ Consider SAVR with **aortic root enlargement** or implantation of a **supra-annular transcatheter valve** in patients at risk of PPM
- ✓ **No implantation of stentless prostheses or prostheses with externally mounted leaflets** in patients at risk of coronary obstruction during future TAV-in-SAV implantation.
- ✓ Anticipation of the feasibility and risks of a **possible future interventions** considering related technical aspects at the index TAVI (device choice, neo-skirt height, commissural alignment, and implantation depth)

Praz F, Borger MA, Lanz J, et al., *Eur Heart J. 2025 Aug 29:ehaf194.*

Trend 2 – Earlier Treatment of Asymptomatic AS Patients

Timing of Intervention for Aortic Stenosis



Therapeutic goals

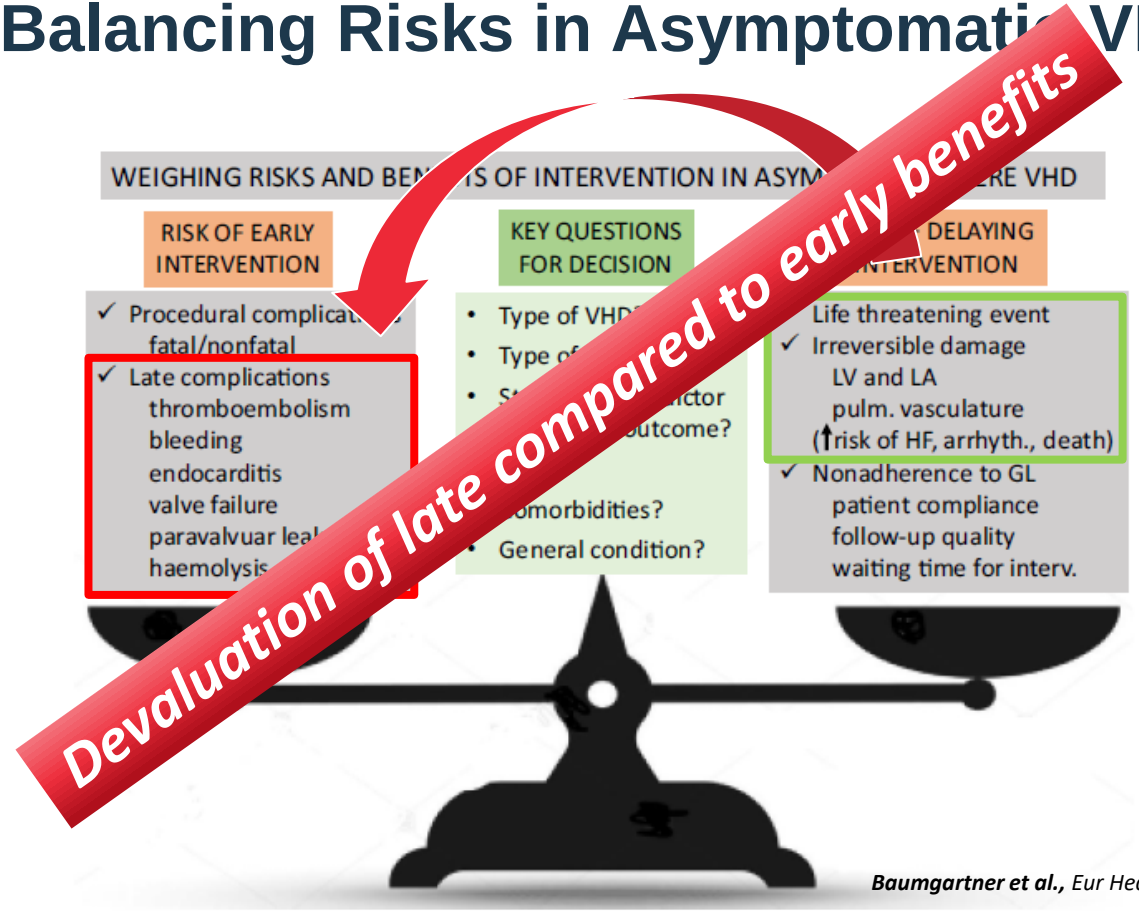
- ***Death ↓***
- ***Hospitalization ↓***
- ***Quality of Life ↑***
- ***Lifetime management***

Risks of surveillance

- ***↑ Irreversible cardiac damage***
- ***↑ Mortality even after AVR***
- ***↑ Procedural risk***

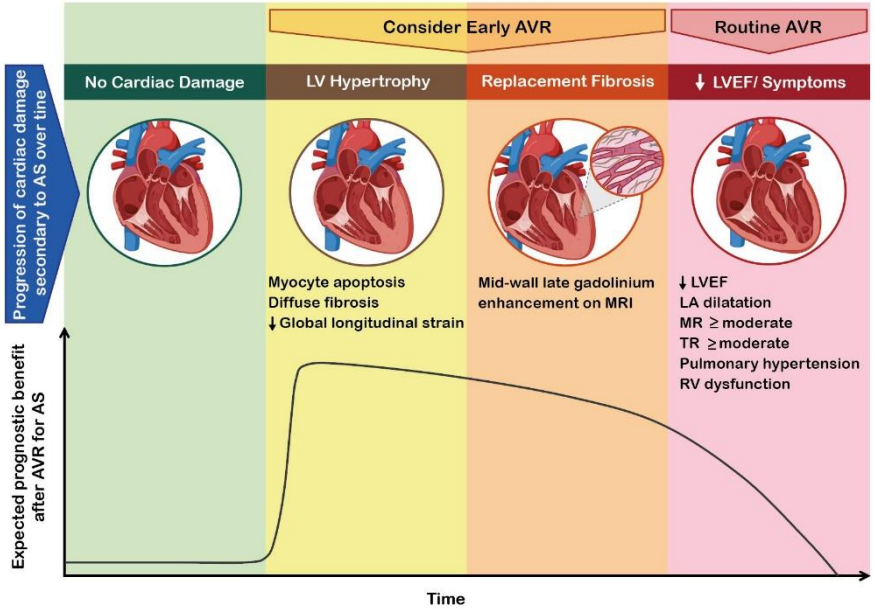
Courtesy of Thomas Pilgrim, MD

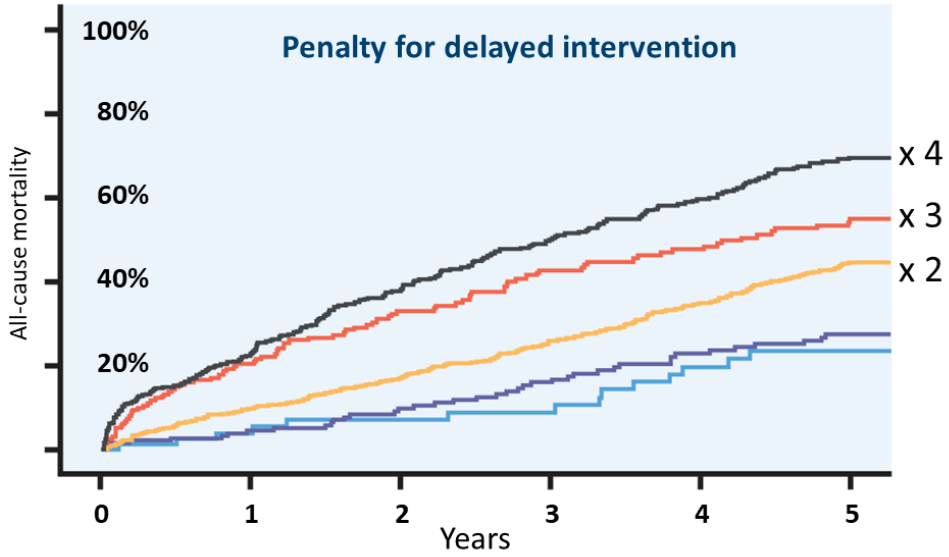
Balancing Risks in Asymptomati VHD



Baumgartner et al., *Eur Heart J 2020; doi:10.1093/eurheartj/ehaa485*

Prevention of Irreversible Cardiac Damage

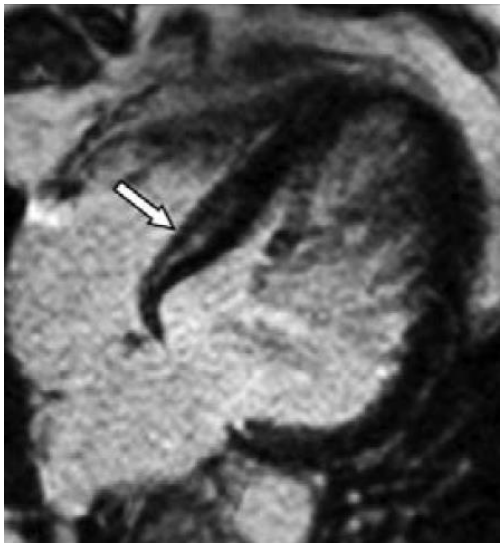




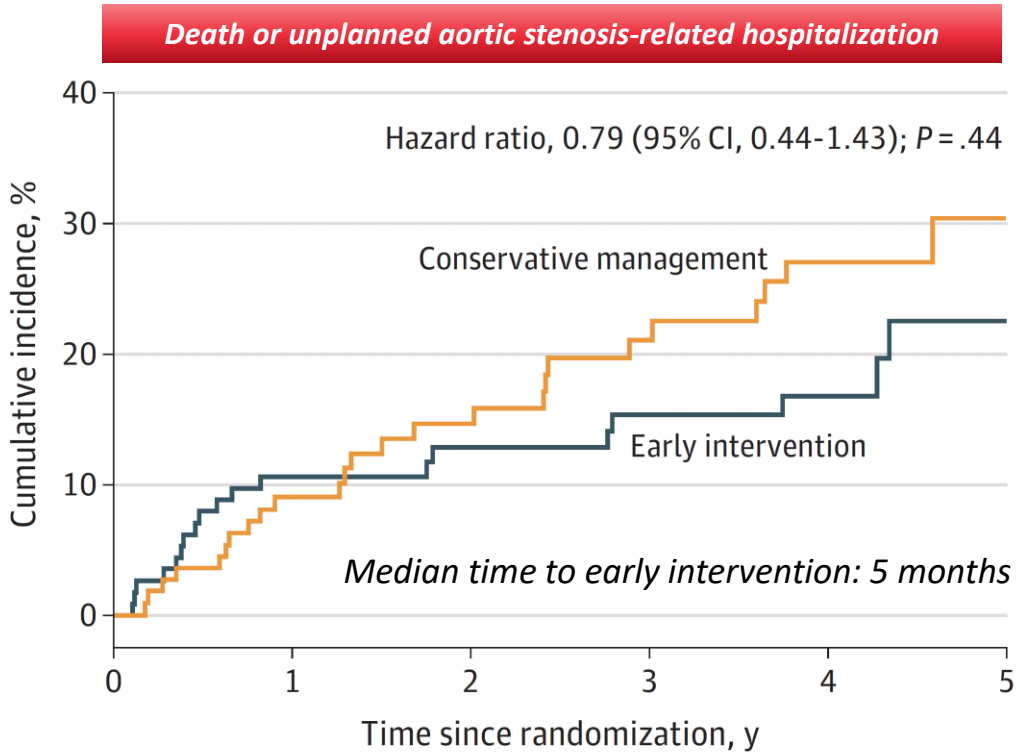
Cardiac damage may occur before the onset of symptoms

Macnyczka A et al, *JACC Cardiovasc Interv 2024;17(21):2502-2514*

EVOLVED: Early AVR for Asymptomatic AS with Myocardial Fibrosis



N=224, mean age 73 yrs, 28% females, median FUP 42 months



Loganath K et al, JAMA 2025;333(3):213-221

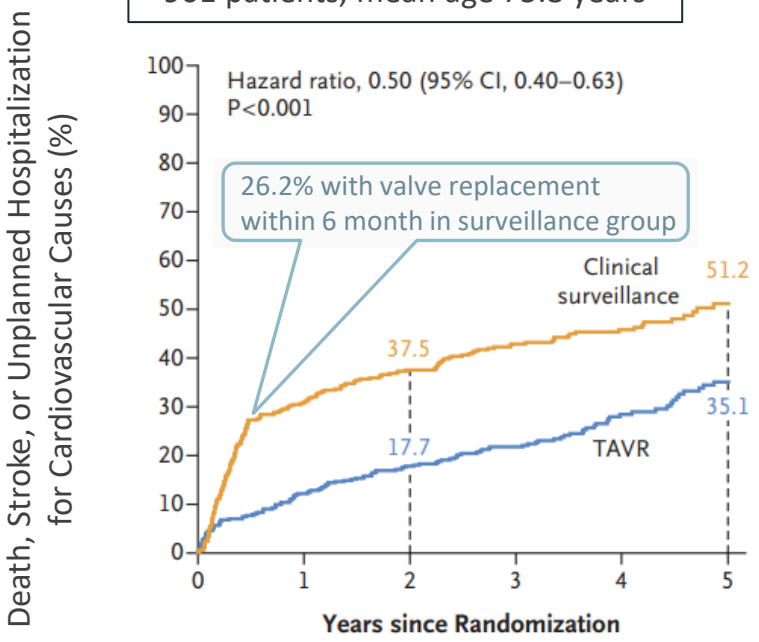
Intervention for Asymptomatic AS

Recommendations	Class	Level
Intervention is recommended in asymptomatic patients with severe AS and LVEF <50% without another cause.	I	B
Intervention should be considered in asymptomatic patients (confirmed by a normal exercise test, if feasible) with severe, high-gradient AS and LVEF ≥50% as an alternative to close active surveillance, if the procedural risk is low.	IIa	A
Intervention should be considered in asymptomatic patients with severe AS and LVEF ≥50% if the procedural risk is low and one of the following parameters is present: • Very severe AS (mean gradient ≥60 mmHg or V_{max} >5.0 m/s) • Severe valve calcification (ideally assessed by CCT) and V_{max} progression ≥0.3 m/s/year. • Markedly elevated BNP/NT-proBNP levels (more than three times age- and sex-corrected normal range, confirmed on repeated measurement without other explanation). • LVEF <55% without another cause.	IIa	B
Intervention should be considered in asymptomatic patients with severe AS and a sustained fall in BP (>20 mmHg) during exercise testing.	IIa	C

Praz F, Borger MA, Lanz J, et al., *Eur Heart J. 2025 Aug 29:ehaf194.*

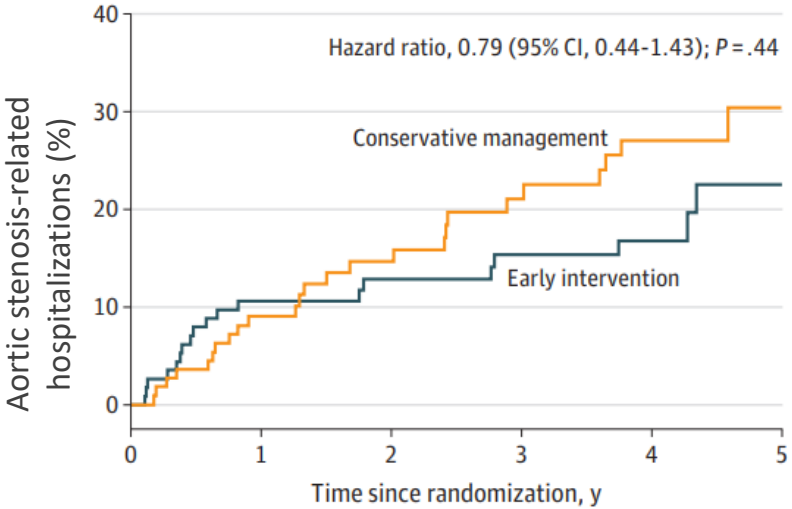
RCTs in patients with asymptomatic severe aortic stenosis

EARLY TAVR
901 patients, mean age 75.8 years



Généreux et al. N Engl J Med 2025;392:217-27

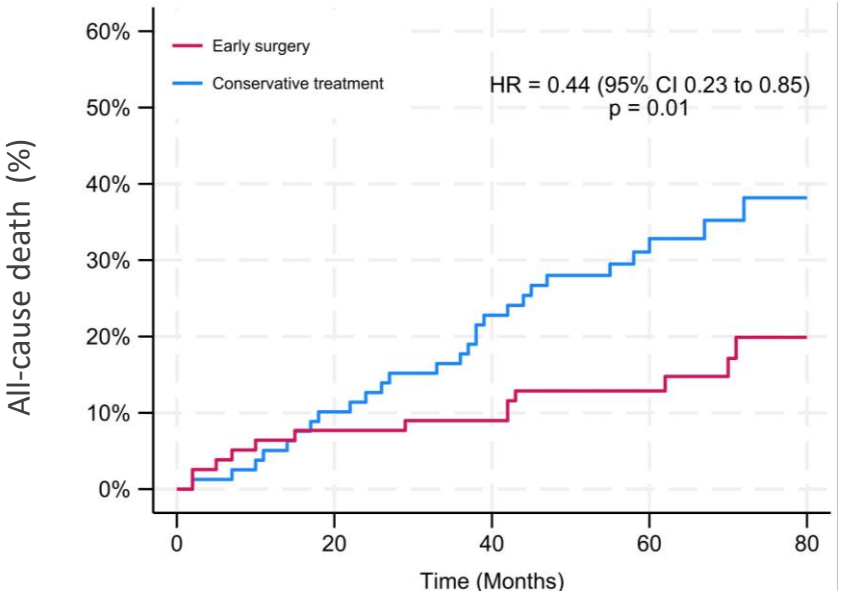
EVOLVED
224 patients, mean age 73 years



Loganathan et al. JAMA 2025;333(3):213-221

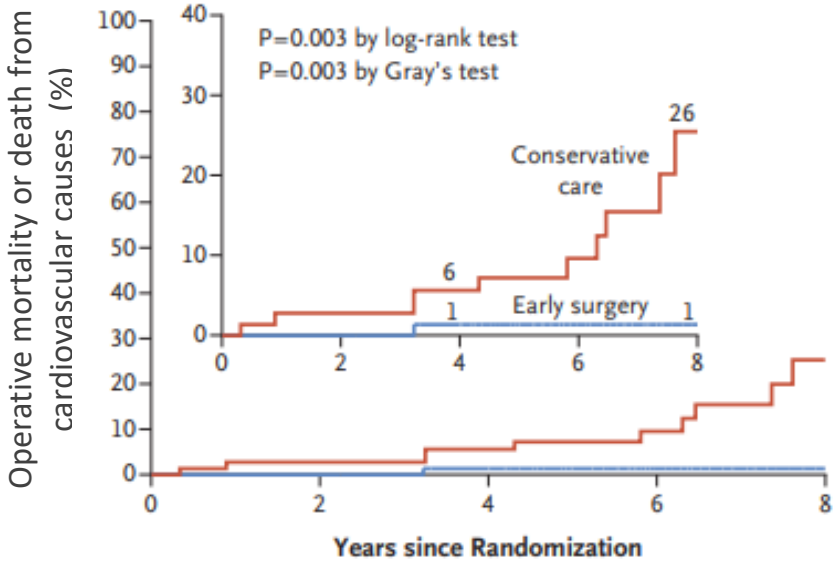
RCTs in Patients With Asymptomatic Severe Aortic Stenosis

AVATAR long-term follow-up
157 patients, mean age 67 years



Banovic et al. Circulation. 2022;145:648–658.

RECOVERY
145 patients, mean age 64 years



Kang et al. N Engl J Med 2020;382:111-9.

Intervention for Asymptomatic AS

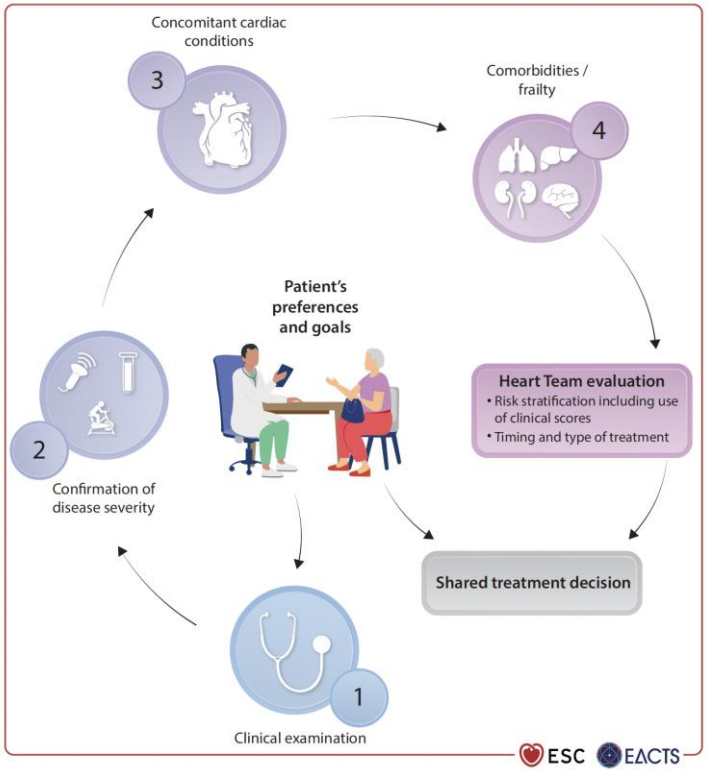
Recommendations	Class	Level
Intervention is recommended in asymptomatic patients with severe AS and LVEF <50% without another cause.	I	B
Intervention should be considered in asymptomatic patients (confirmed by a normal exercise test, if feasible) with severe, high-gradient AS and LVEF ≥50% as an alternative to close active surveillance, if the procedural risk is low.	IIa	A
Intervention should be considered in asymptomatic patients with severe AS and LVEF ≥50% if the procedural risk is low and one of the following parameters is present: • Very severe AS (mean gradient ≥60 mmHg or V_{max} >5.0 m/s) • Severe valve calcification (ideally assessed by CCT) and V_{max} progression ≥0.3 m/s/year. • Markedly elevated BNP/NT-proBNP levels (more than three times age- and sex-corrected normal range, confirmed on repeated measurement without other explanation). • LVEF <55% without another cause.	IIa	B
Intervention should be considered in asymptomatic patients with severe AS and a sustained fall in BP (>20 mmHg) during exercise testing.	IIa	C

NEW

Praz F, Borger MA, Lanz J, et al., *Eur Heart J. 2025 Aug 29:ehaf194.*

Limitations of RCTs in Asymptomatic Aortic Stenosis

- ✓ For some of them **small and underpowered**
- ✓ Inclusion of a **selected population of young low risk patients** with **very severe aortic stenosis**
- ✓ Quality of close surveillance in the conservative arm?
- ✓ Inclusion of TAVR implantation as an event in EARLY-TAVR

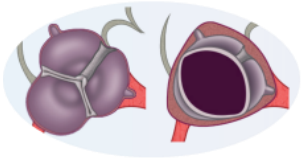


Shared decision-making!

Praz F, Borger MA, Lanz J, et al., *Eur Heart J. 2025 Aug 29:ehaf194.*

Trend 3 – Bicuspid Aortic Stenosis

Bicuspid aortic stenosis

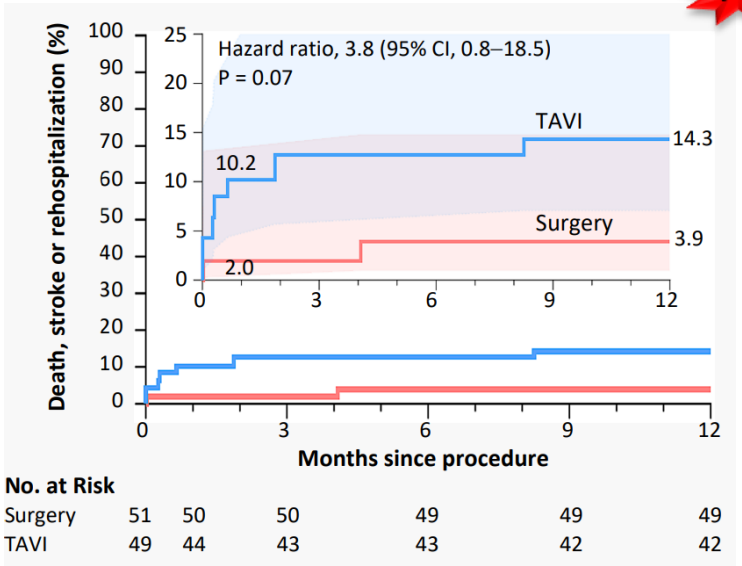


Recommendations	Class	Level
TAVI may be considered for the treatment of severe BAV stenosis in patients at increased surgical risk, if the anatomy is suitable.	IIb	B

NEW

Potential risks of TAVR

- ↑ *Stroke*
- ↑ *Annular rupture*
- ↑ *Paravalvular leak*



NOTION II RCT

Praz F, Borger MA, Lanz J, et al., *Eur Heart J. 2025 Aug 29:ehaf194.*

Take-home Messages

- General trend of **TAVR indication expansion** *(be reasonable and consider the evidence!)*
- **AVR optimization** plays a crucial role both for transcatheter and surgical interventions
- **Earlier intervention should be encouraged** *(as a shared decision with the informed patient!)*
- Additional (randomized) evidence is needed for the treatment of **bicuspid aortic stenosis**