



Moderate AS: Not So Benign

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 - Edwards Lifesciences: Echo CoreLab for PARTNER 2– SAPIEN 3, PARTNER 3, TAVR-UNLOAD, EARLY-TAVR, PROGRESS, ALLIANCE X4 trials
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Aortic Stenosis: Progression Stage and When to Intervene?

**At risk for AS (BAV, Aortic Sclerosis)
(Stage A)**

Mild / Moderate AS (Stage B)

**Severe AS – Asymptomatic
No LV Dysfunction (Stage C1)**

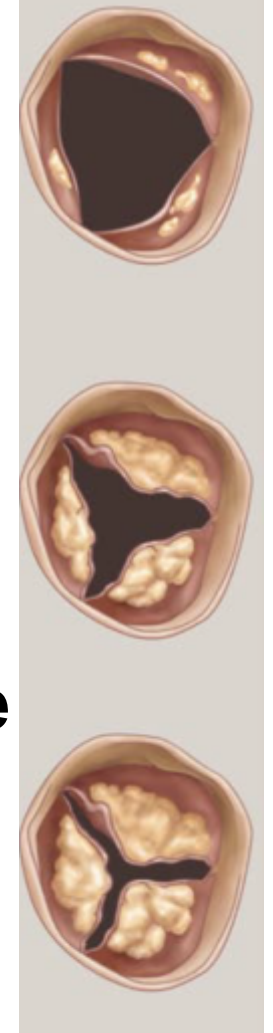
**Severe AS – Asymptomatic
LV Dysfunction (EF < 50%) (Stage C2)**

**Severe AS – Symptomatic
Stage D**

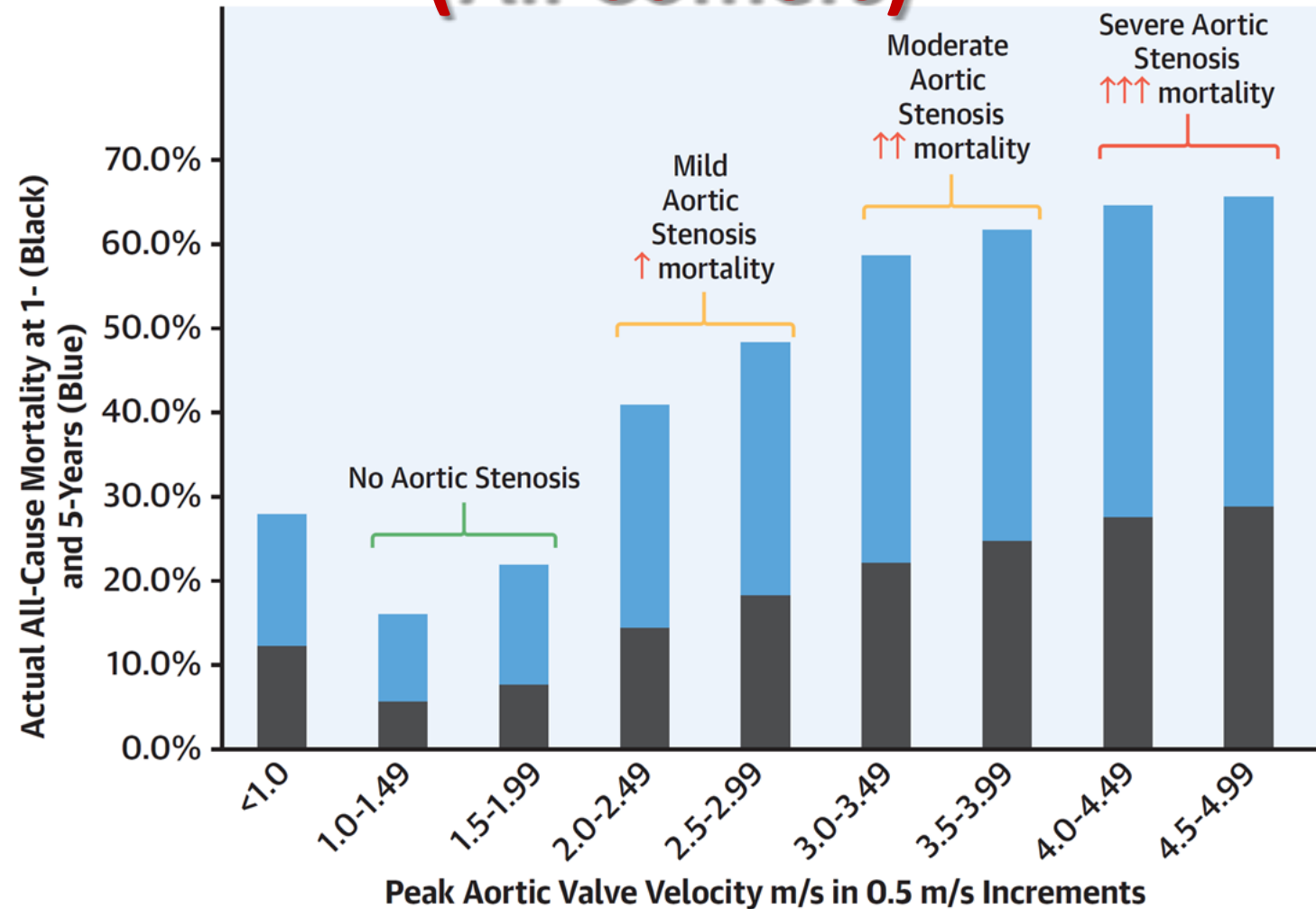
Follow

**Early AVR
vs.
Surveillance**

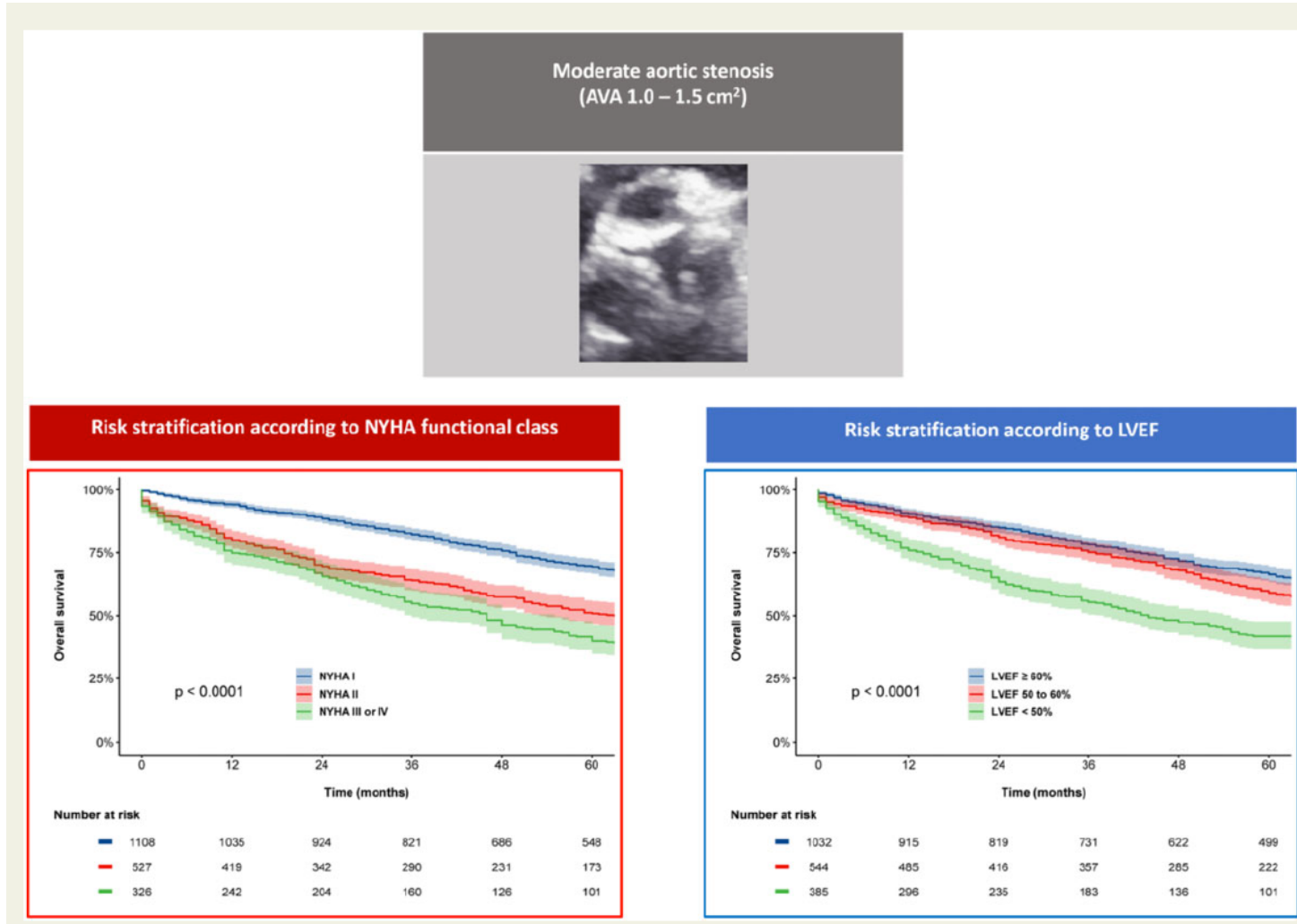
AVR Now



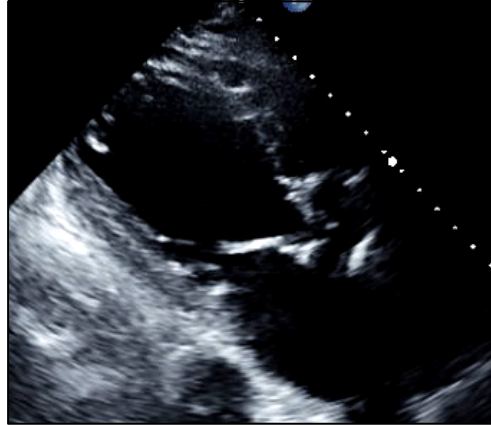
Outcome of Patients with Moderate AS (All Comers)



Moderate aortic stenosis: importance of symptoms and left ventricular ejection fraction



Case: Moderate AS with Low LVEF and HF Symptoms (NYHA Class III)



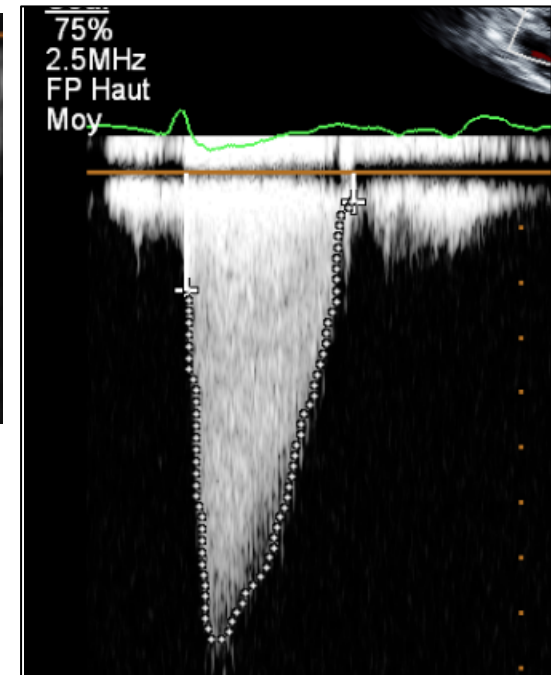
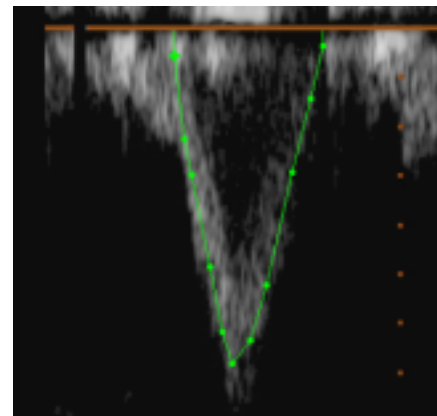
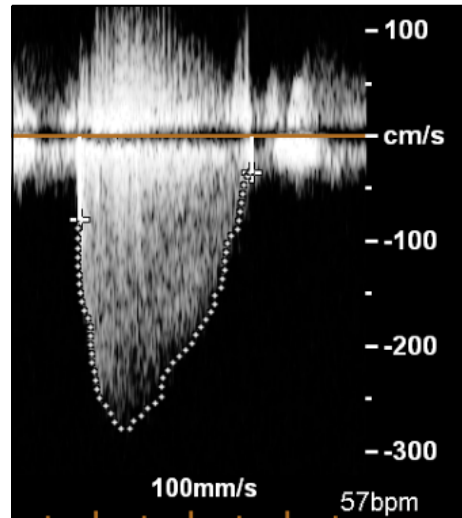
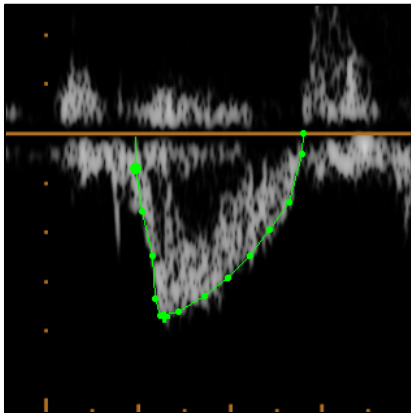
Rest

SV= 36 ml
 $Q_{\text{mean}}=139$ ml/s
LVEF=20%
 $\Delta P= 35 / 22$ mmHg
AVA= 0.85 cm²

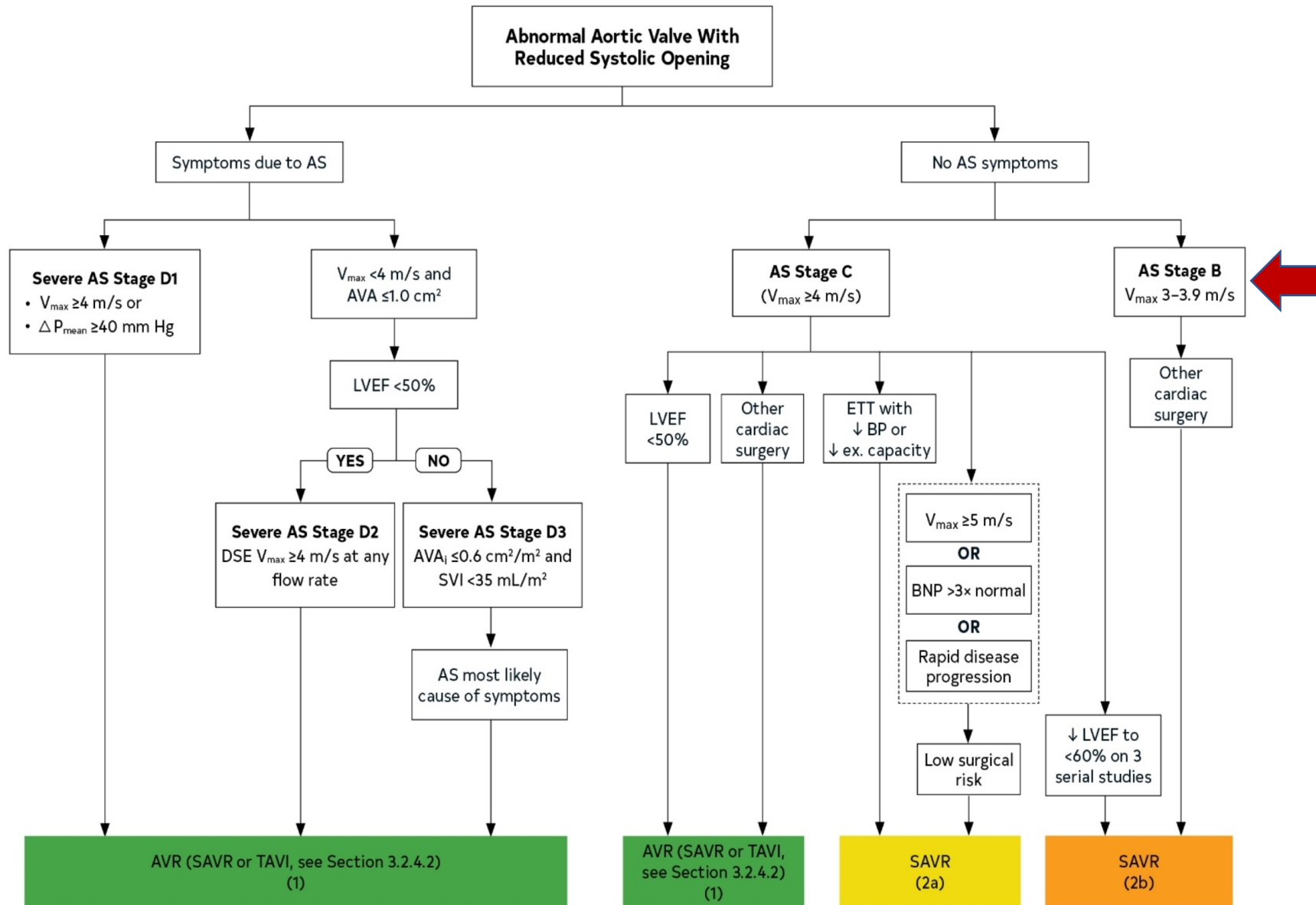


DSE

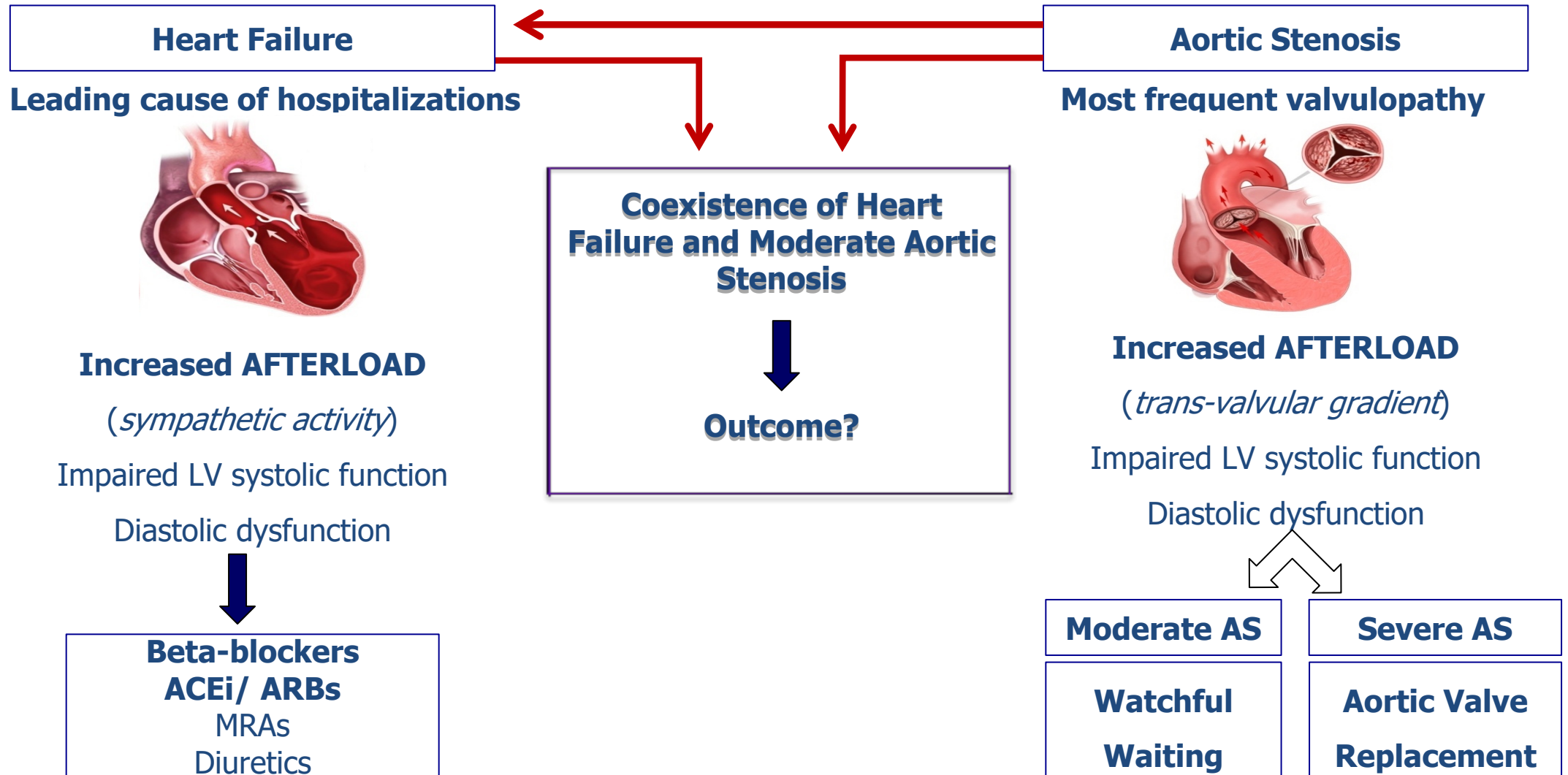
SV= 55 ml
 $Q_{\text{mean}}=243$ ml/s
LVEF=30%
 $\Delta P= 63 / 32$ mmHg
AVA= 1.2 cm²



Timing of Intervention for AS

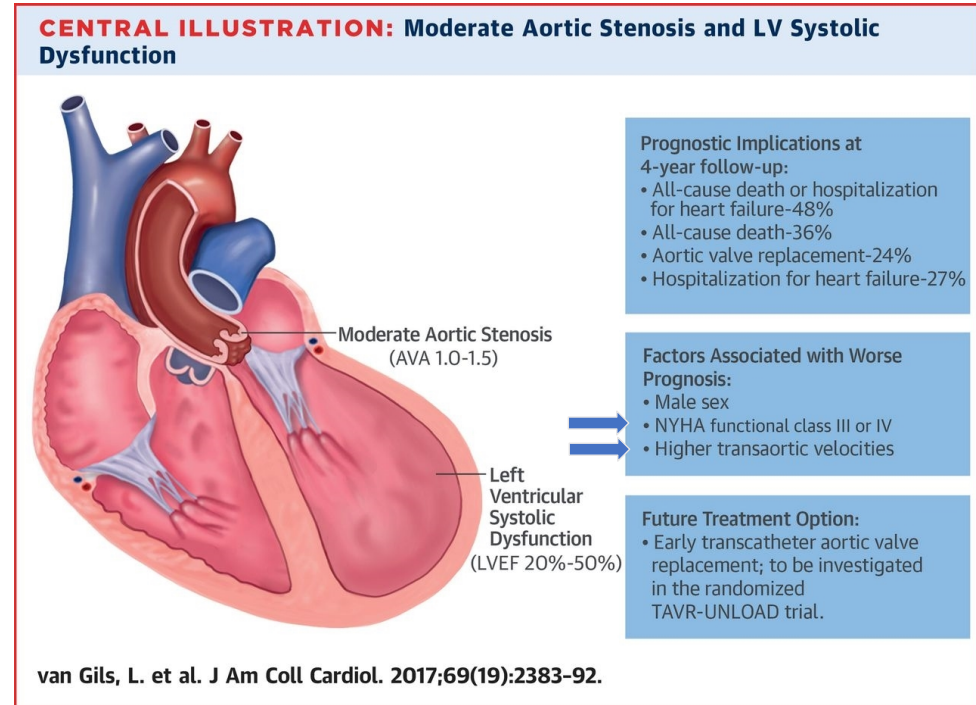
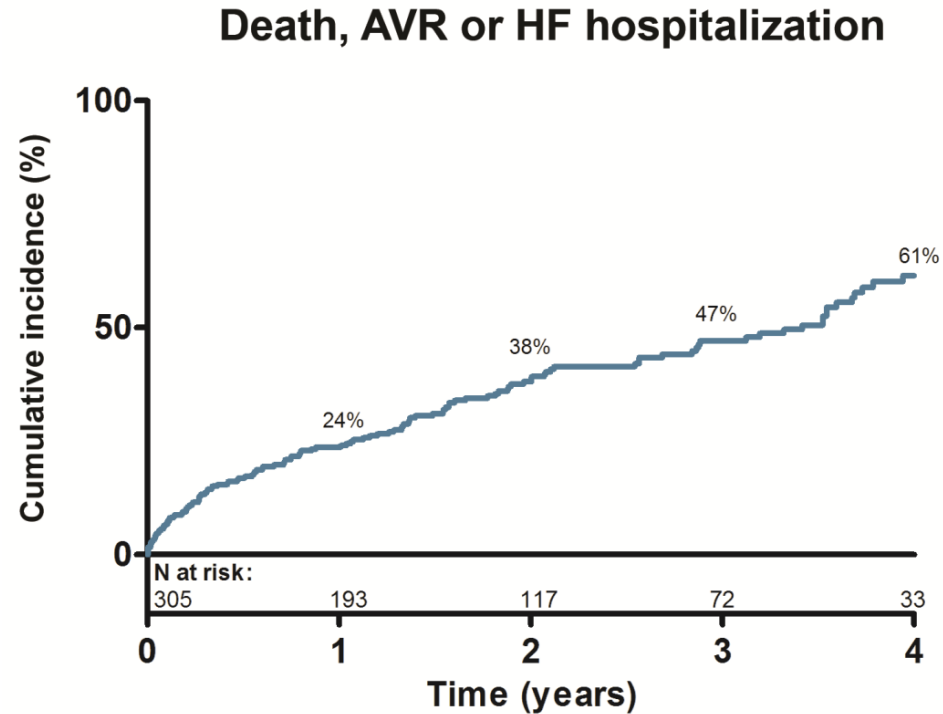


Pathophysiology - AS and HF



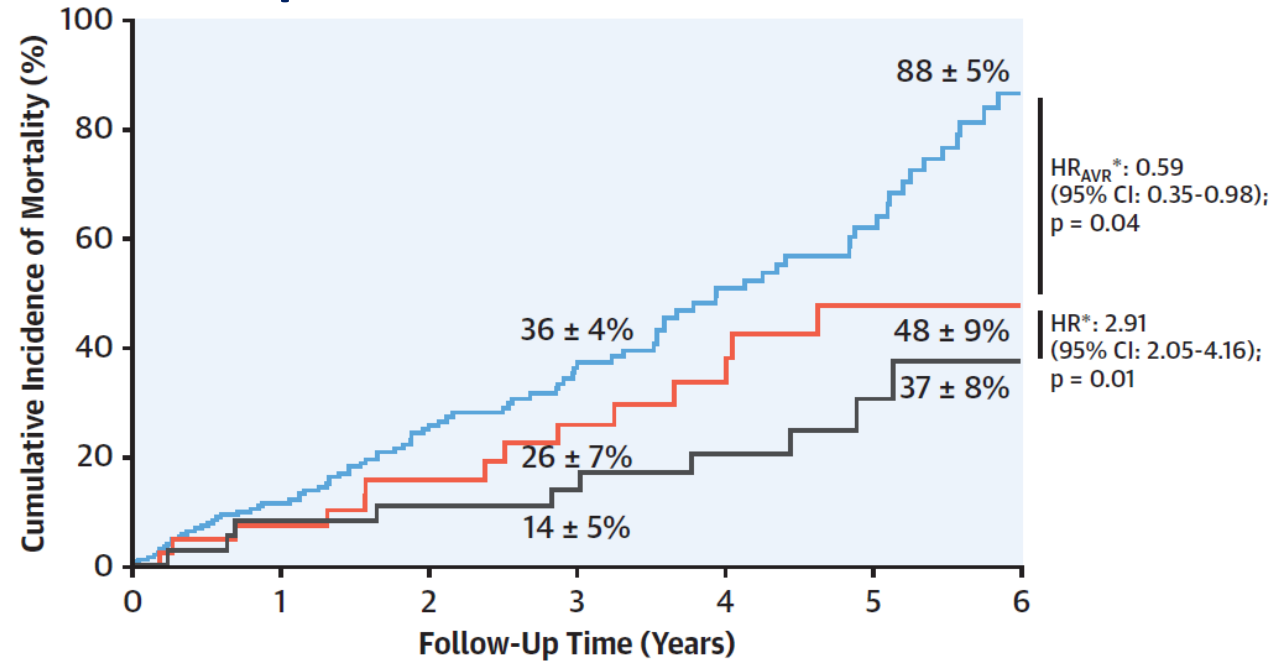
Outcome of Moderate AS and Low LVEF

Retrospective 3-center study of 305 patients with moderate AS and LVEF<50%



Outcome of Patients with Moderate AS & Reduced LVEF

Propensity score matched study of 262 pts. with moderate AS HFrEF vs. 262 pts. With HFrEF and no AS



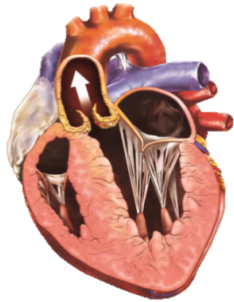
Patients at risk:

Group	0	1	2	3	4	5	6
— HFrEF + Moderate AS without Intervention	219	103	36	5			
— HFrEF + Moderate AS with Intervention	43	26	15	4			
— HFrEF	43	32	22	7			

Matched Patients

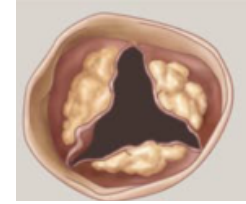
Jean, G. et al. J Am Coll Cardiol. 2021;77(22):2796-803.

**PRESERVED LV
FUNCTION**

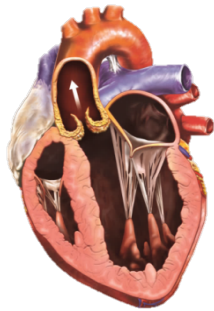


GOOD OUTCOME

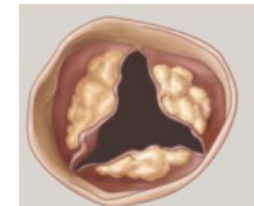
**MODERATE AS
(SEVERE AS)**



LV DYSFUNCTION
(Systolic or Diastolic)



HEART FAILURE
POOR OUTCOME

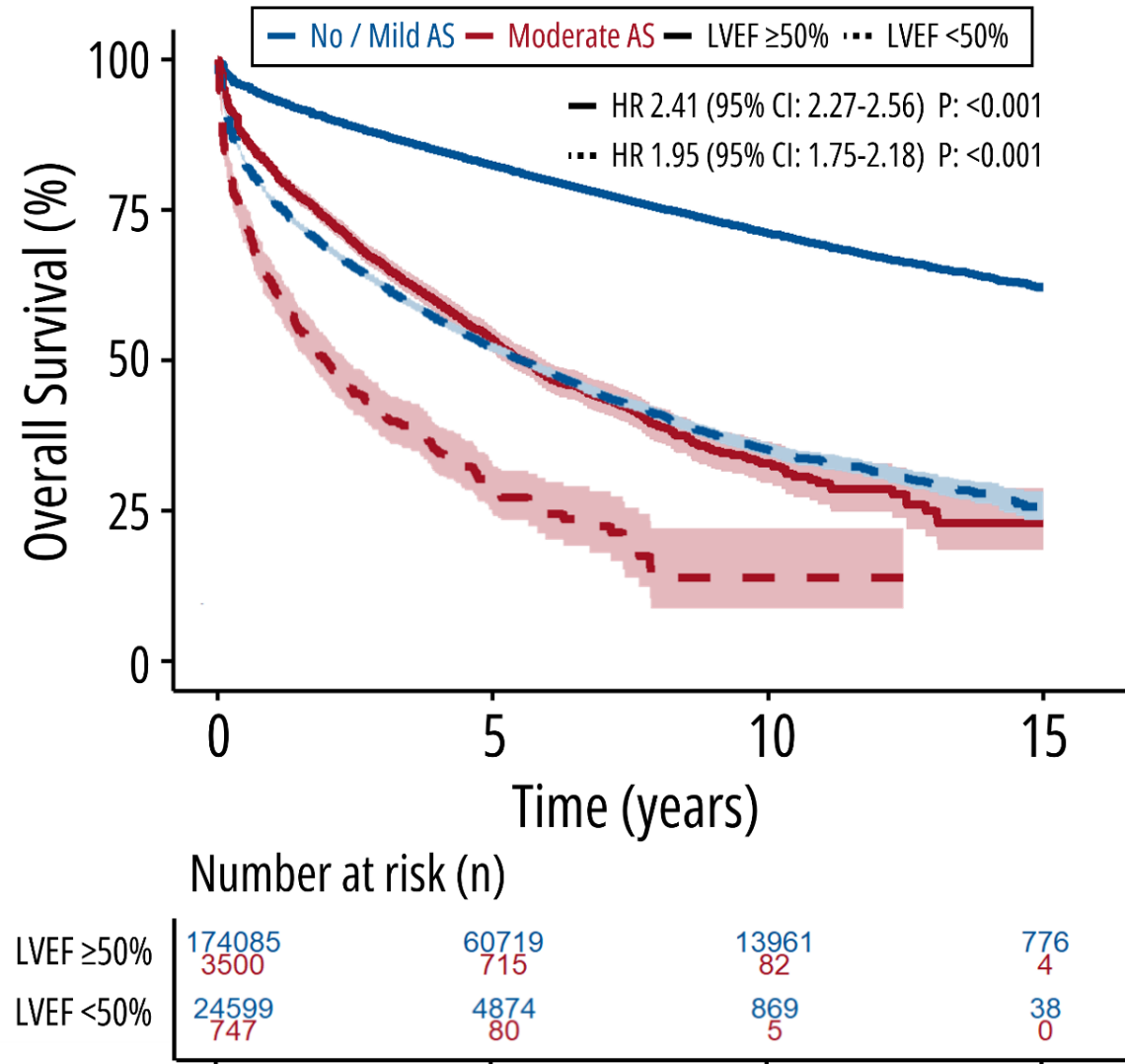


MODERATE AS

**What is moderate AS for a good ventricle
may be severe for a depressed ventricle!**

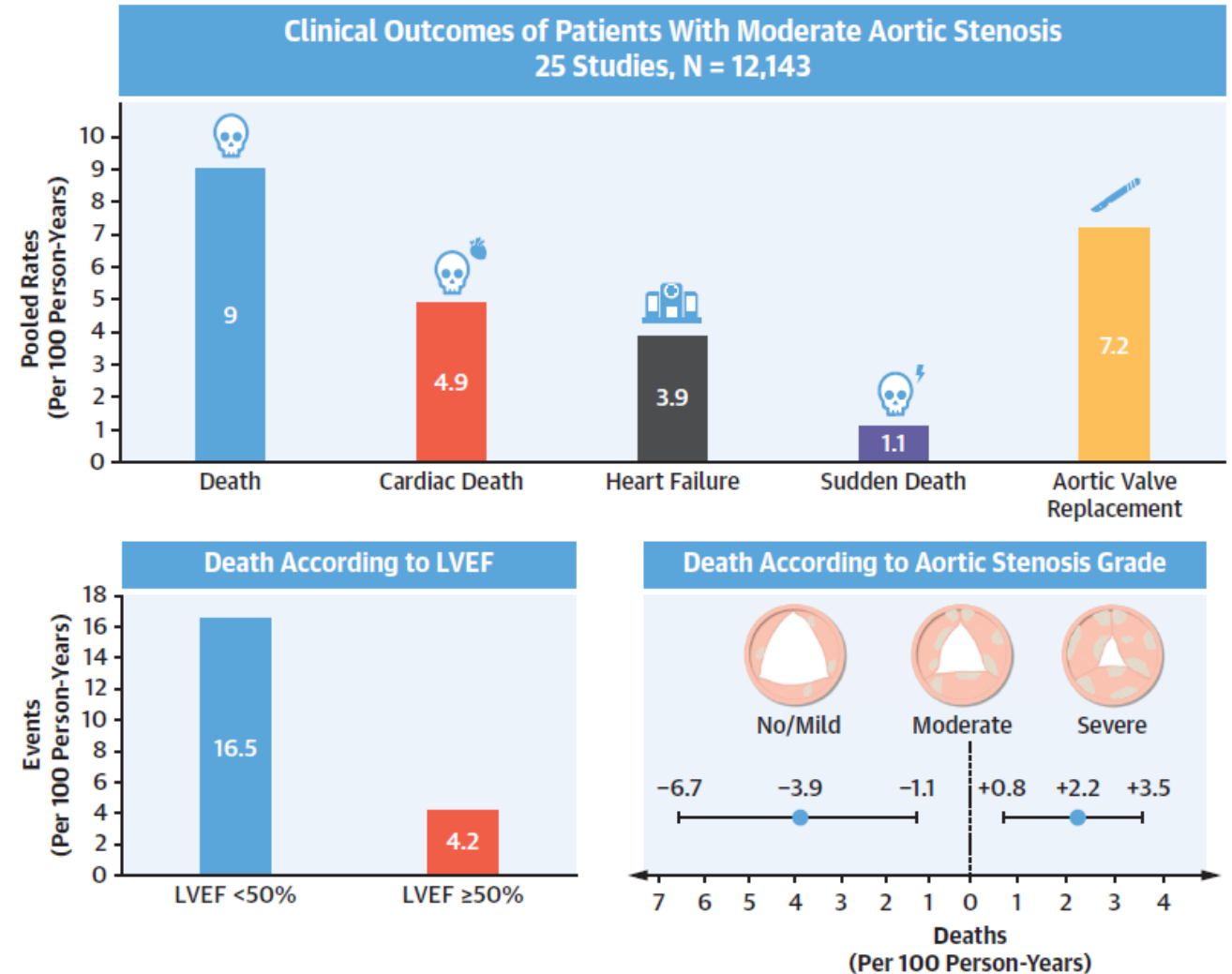
Moderate Aortic Valve Stenosis is Associated with Increased Mortality and Lifetime Loss:

Meta-Analysis of Reconstructed Time-to-Event Data



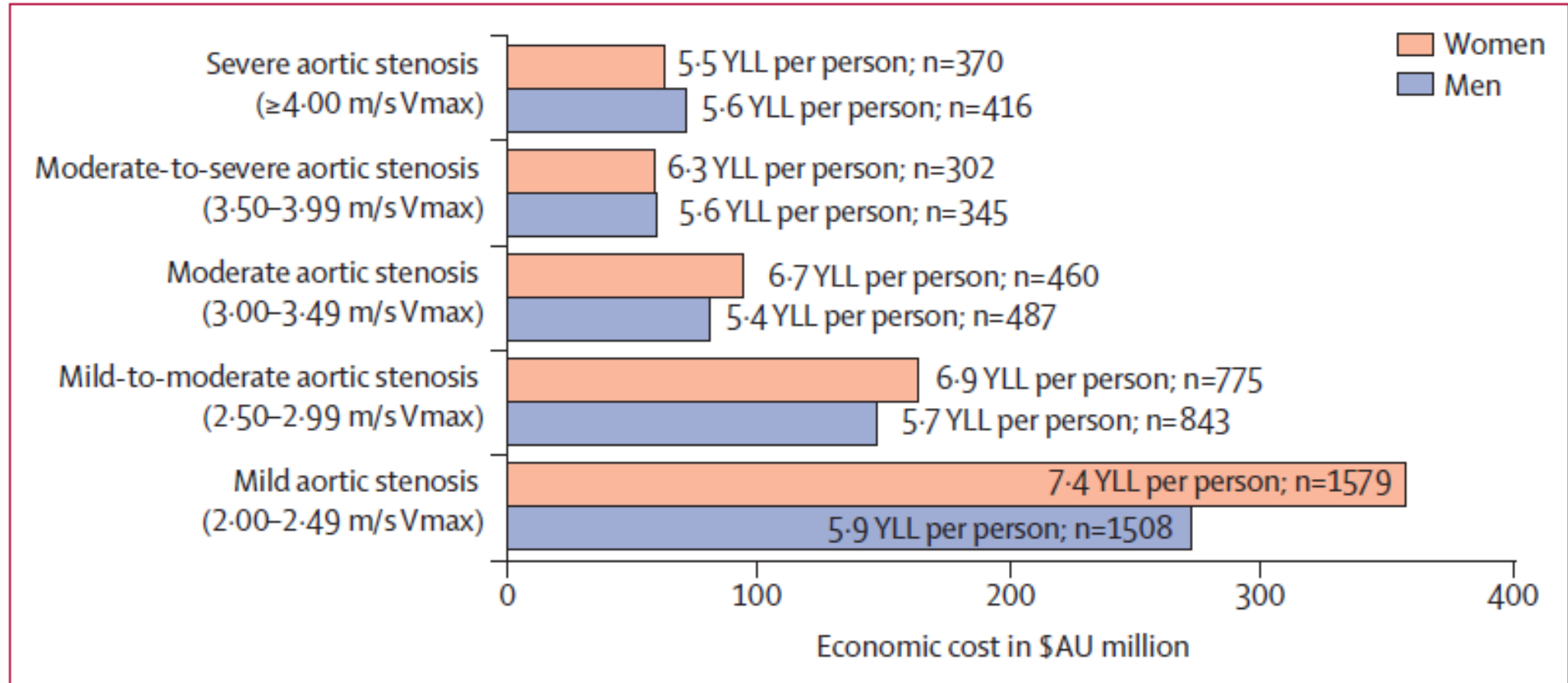
Impact of Moderate Aortic Stenosis on Long-Term Clinical Outcomes: A Systematic Review and Meta-analysis

CENTRAL ILLUSTRATION Outcomes in Moderate Aortic Stenosis



Any degree of aortic stenosis in older individuals is associated with premature mortality and QALYs

Years of Life Lost and Associated Economic Cost According to Degree of AS and Sex





Live longer and better without aortic valve stenosis



**Philippe Pibarot, Marie-Annick Clavel*

Moderate AS is NOT benign!

- There is strong body of evidence that **moderate AS has a negative impact on outcomes**, particularly if associated with heart failure / symptoms
- **There is no indication for AVR** in patients with moderate AS unless they have an indication for cardiac surgery (e.g. CABG)
- **Closer clinical/ echo FU (every year)** is recommended for at-risk moderate AS
- **Role of early TAVR is currently being tested**

THE PRESENT AND FUTURE

JACC GUIDELINE COMPARISON

ACC/AHA and ESC/EACTS Guidelines for the Management of Valvular Heart Diseases



JACC Guideline Comparison

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on behalf of the EuroValve Consortium



CENTRAL ILLUSTRATION Comparison Between Guidelines in the Management of Valvular Heart Disease

Aortic Stenosis		Aortic Regurgitation		Mitral Stenosis	
AVR if symptoms and high gradient (I)	AVR in AG (I) vs AVR in EG (IIa) for preserved EF low-flow, low-gradient severe AS	AVR if symptoms (I)	LV dysfunction = LVESD >50 mm or LVESD >25 mm/m ² or LVEF ≤50% in EG vs LVEF ≤55% in AG	PMC if symptoms and favorable anatomy (I)	PMC at a Comprehensive Valve Center (I) in AG vs no recommendation in EG
-	-	-	-	-	-
AVR if asymptomatic and LV dysfunction or other cardiac surgery (I)	TAVR considered vs SAVR in patient >65 y of age (AG) vs >75 y of age (EG)	AVR if asymptomatic and LV dysfunction or other cardiac surgery (I)	AVR if moderate AR and other cardiac surgery (IIa) in AG vs no recommendation in EG	Surgery if PMC is not suitable (I)	
-					
AVR if asymptomatic and Vmax >5 m/s or >0.3 m/s/y, exercise intolerance (IIa)					
Primary Mitral Regurgitation		Secondary Mitral Regurgitation		Tricuspid Regurgitation	
MV surgery if symptoms (I)	TEER for high-risk patients IIa for AG vs IIb for EG	MV intervention if symptoms after GDMT (I)	MV surgery if symptoms at time of CABG I for EG vs IIa for AG	TV surgery in TR undergoing left-sided valve surgery if severe (I) or if mild-to-moderate and TA dilatation or prior signs and symptoms of right-sided HF	TV surgery if symptoms and severe primary TR (I in EG vs IIa in AG)
-	-	-	-	-	-
MV repair if asymptomatic and LV dysfunction (I)	MV surgery if asymptomatic and high probability of successful and durable repair in AG (IIa) vs watchful waiting except if AF or SPAP >50 mm Hg in EG (IIa)	MV surgery if symptoms and low-risk after GDMT (IIb)	TEER if symptoms and ineligible for surgery in EG (IIa) vs no surgical consideration (only anatomy and COAPT criteria) in AG (IIb)		TTVI if symptoms, anatomically eligible and not amenable for surgery in EG (IIb) vs no recommendation in AG
-					
Repair > Replacement					
		Consistencies between guidelines	Discrepancies between guidelines		