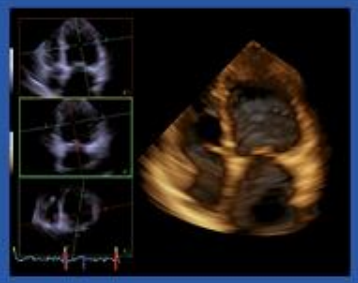


EuroValve

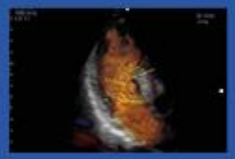
November 8-9, 2013

News from Valves Guidelines ESC 2012

Aortic Stenosis

Dr Julien Magne
University of Liege, CHU Sart Tilman, Belgium



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Faculty Disclosure

Julien Magne

I disclose the following financial relationships:

I have **no financial relationships** to disclose.

Indication for AVR: What is not new!

Symptomatic patients

	Class	Level
AVR is indicated in patients with severe AS and any symptoms related to AS.	I	B
AVR is indicated in patients with severe AS undergoing CABG, surgery of the ascending aorta or another valve.	I	C
AVR should be considered in patients with moderate AS undergoing CABG, surgery of the ascending aorta or another valve.	IIa	C
AVR should be considered in symptomatic patients with severe AS, low flow, low gradient with reduced EF, and evidence of flow reserve.	IIa	C
AVR may be considered in symptomatic patients with severe AS low flow, low gradient, and LV dysfunction without flow reserve.	IIb	C

Indication for AVR: What is not new!

Asymptomatic patients

	Class	Level
AVR is indicated in asymptomatic patients with severe AS and systolic LV dysfunction (LVEF < 50%) not due to another cause.	I	C
AVR is indicated in asymptomatic patients with severe AS and abnormal exercise test showing symptoms on exercise clearly related to AS.	I	C
AVR should be considered in asymptomatic patients, with normal EF and none of the above mentioned exercise test abnormalities, if the surgical risk is low, and one or more of the following findings is present: • severe valve calcification and a rate of peak of transvalvular velocity progression ≥ 0.3 m/s per year.	IIa	C
AVR may be considered in asymptomatic patients with severe AS, normal EF and none of the above mentioned exercise test abnormalities, if surgical risk is low, and one or more of the following findings is present: • excessive LV hypertrophy in the absence of hypertension.	IIb	C

Indication for AVR: What is New!

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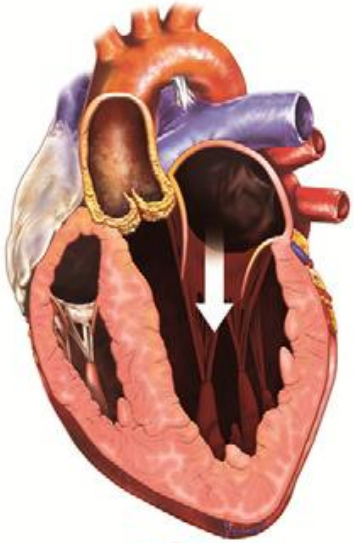
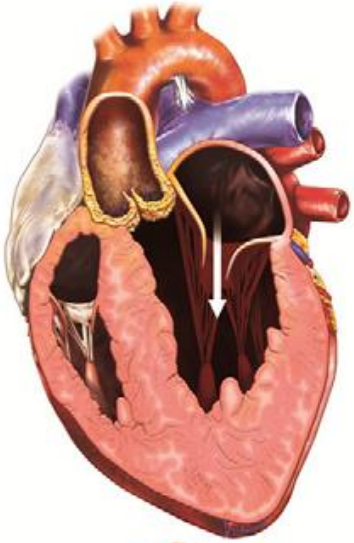
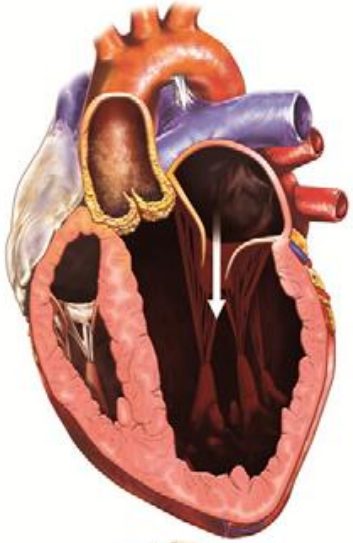
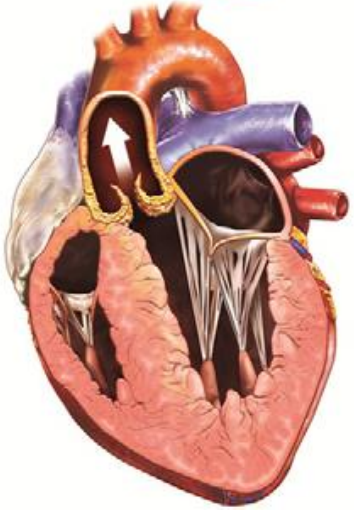
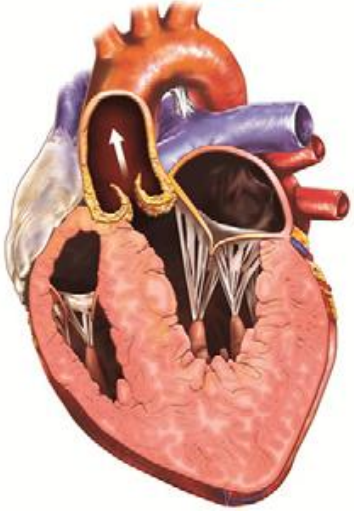
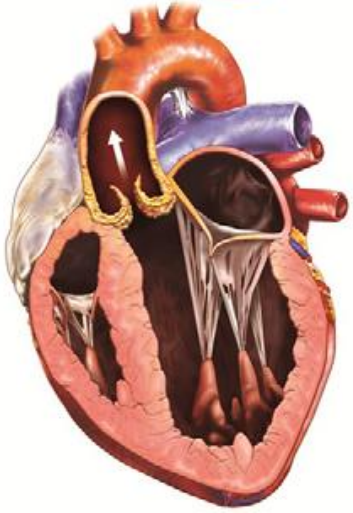
AVR should be considered in high risk patients with severe symptomatic AS who are suitable for TAVI but in whom surgery is favoured by a "heart team" based on the individual risk profile and anatomic suitability.	IIa	B
AVR should be considered in symptomatic patients with low flow, low gradient (< 40 mmHg) AS with normal EF only after careful confirmation of severe AS.	IIa	C
AVR should be considered in symptomatic patients with severe AS, low flow, low gradient with reduced EF, and evidence of flow reserve.	IIa	C
AVR may be considered in symptomatic patients with severe AS low flow, low gradient, and LV dysfunction without flow reserve.	IIb	C

	Normal LVEF Normal flow High gradient	Normal LVEF “Paradoxical” LF-LG	Low LVEF LF-LG
DIASTOLE			
SYSTOLE			

Pibarot et al. JACC, 2012

(*Circulation*. 2007;115:2856-2864.)

Paradoxical Low-Flow, Low-Gradient Severe Aortic Stenosis Despite Preserved Ejection Fraction Is Associated With Higher Afterload and Reduced Survival

Zeineb Hachicha, MD; Jean G. Dumesnil, MD; Peter Bogaty, MD; Philippe Pibarot, DVM, PhD

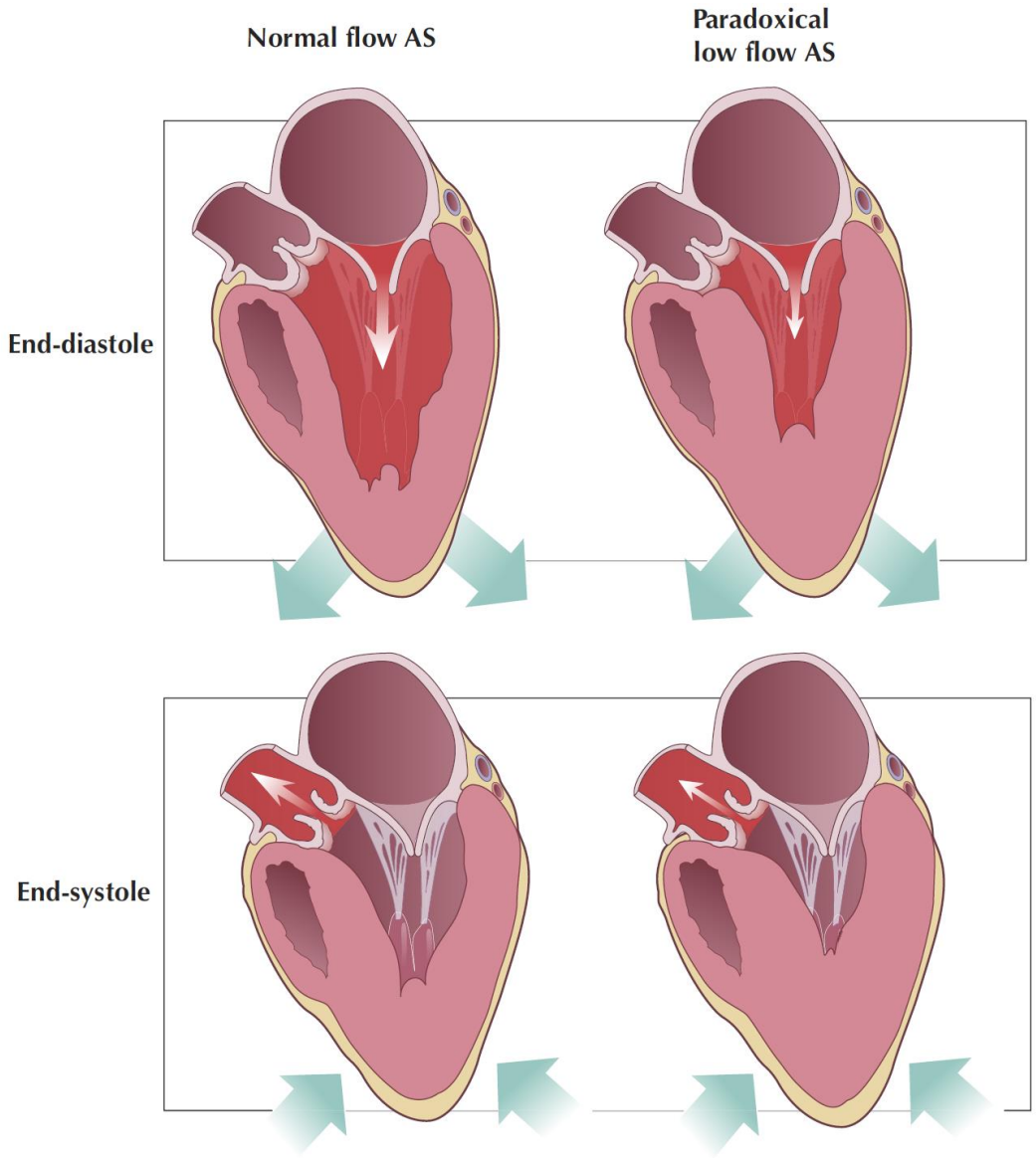
n=512

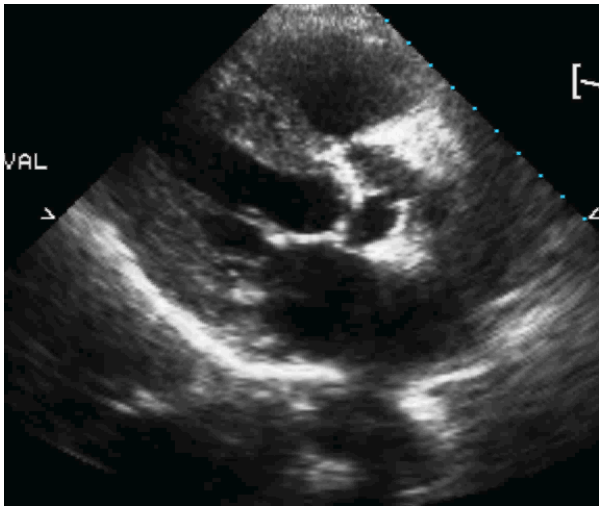
SEVERE AS *(AVAi ≤ 0.6 cm²/m²)*

PRESERVED LV FUNCTION *(LVEF ≥ 50%)*

331 patients (65%)
SVI > 35ml/m²
Normal Flow (NF)

181 patients (35%)
SVI ≤ 35ml/m²
Paradoxical Low Flow





Normal flow AS	Paradoxical LF AS
LVEDV: 115 ml	**LVEDV:** 85 ml
LVEF: 60%	**LVEF:** 60%
SV = 70 ml	**SV** = 50 ml
SVi = 39 ml/m²	**SVi** = 28 ml/m²
AVA = 0.7 cm²	**AVA** = 0.7 cm²
ΔP_{mean} = 45 mmHg	ΔP_{mean} = 25 mmHg
Z_{va} = 4.2 mmHg/ml.m^{-2}	Z_{va} = 5.2 mmHg/ml.m^{-2}

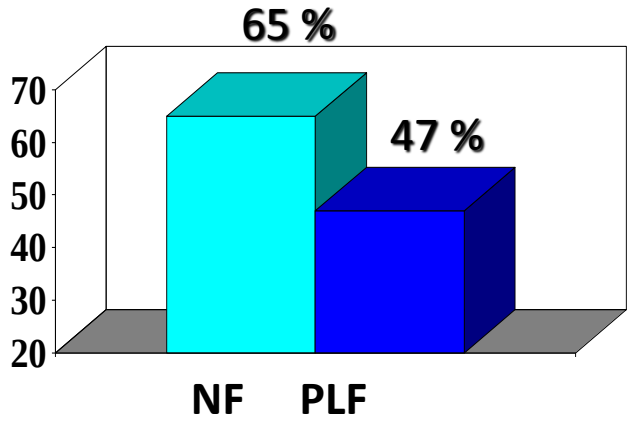
Pibarot et al. JACC CVI, 2009

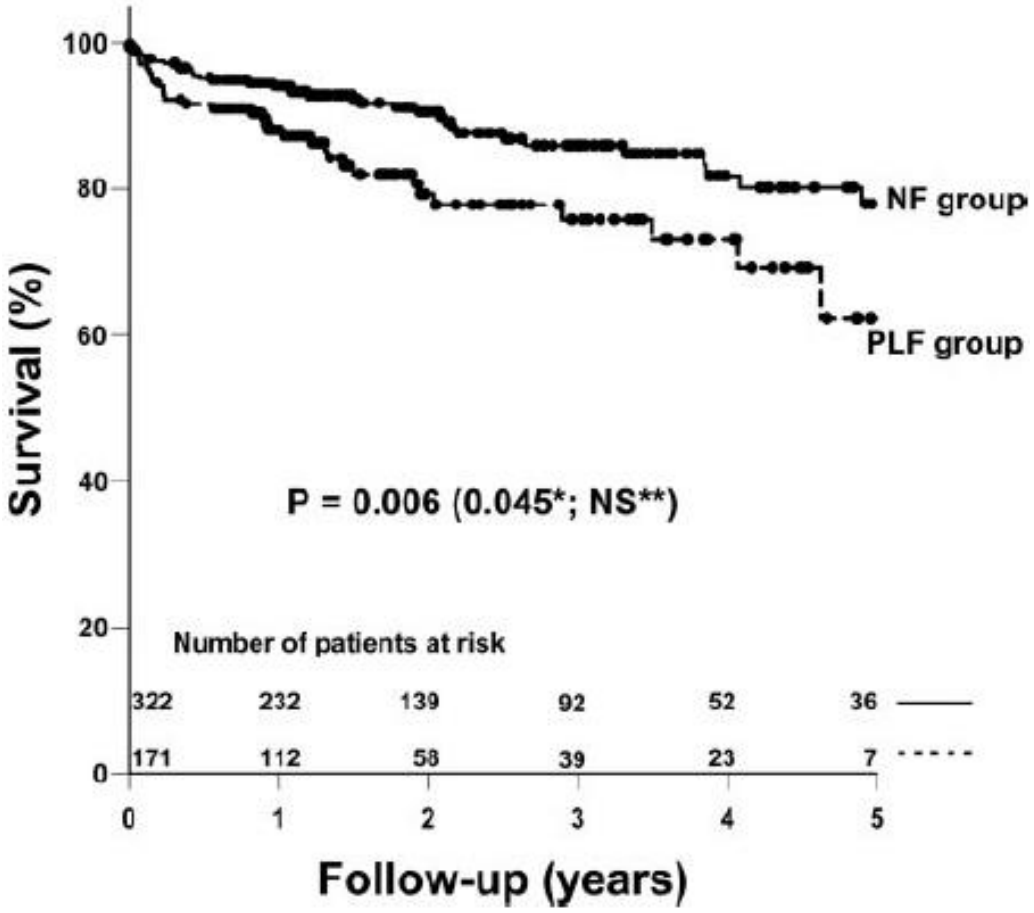
Outcome of Patients with Paradoxical Low Flow, Low Gradient AS

512 Patients with

LVEF ≥ 50%

Percentage of Patients Treated Surgically

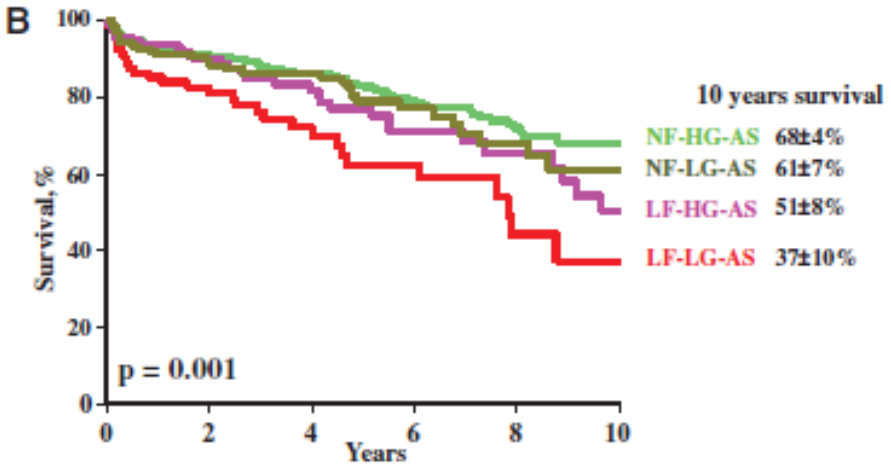


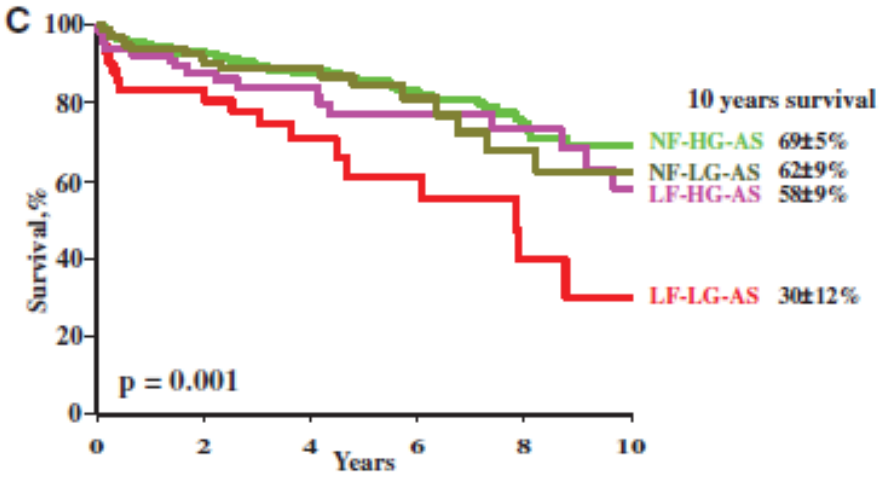


Hachicha Z et al., Circulation. 115:2856-2864, 2007

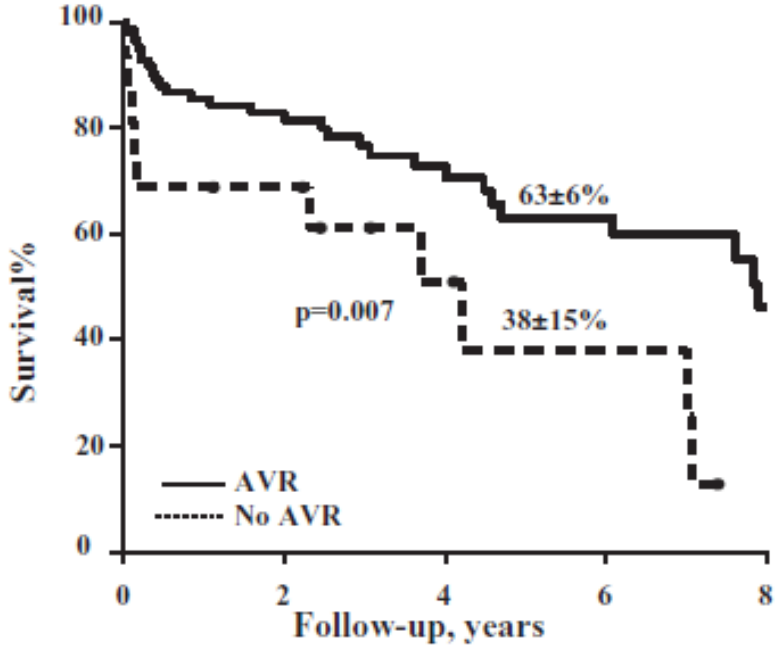
Courtesy From Philippe Pibarot

Outcome of Paradoxical LFLG Severe AS





n= 768 Severe AS with preserved LVEF
Classification according to catheterization



Mohty, Magne et al. Circulation, 2013

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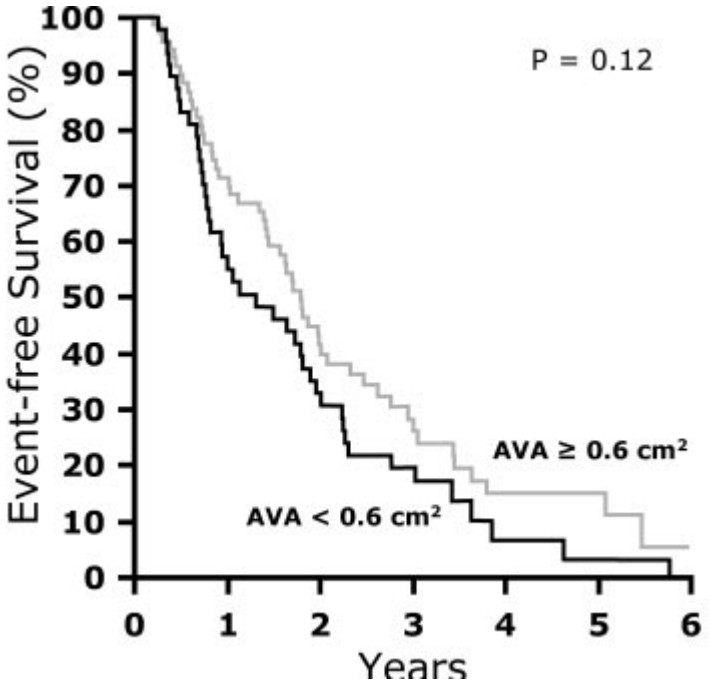
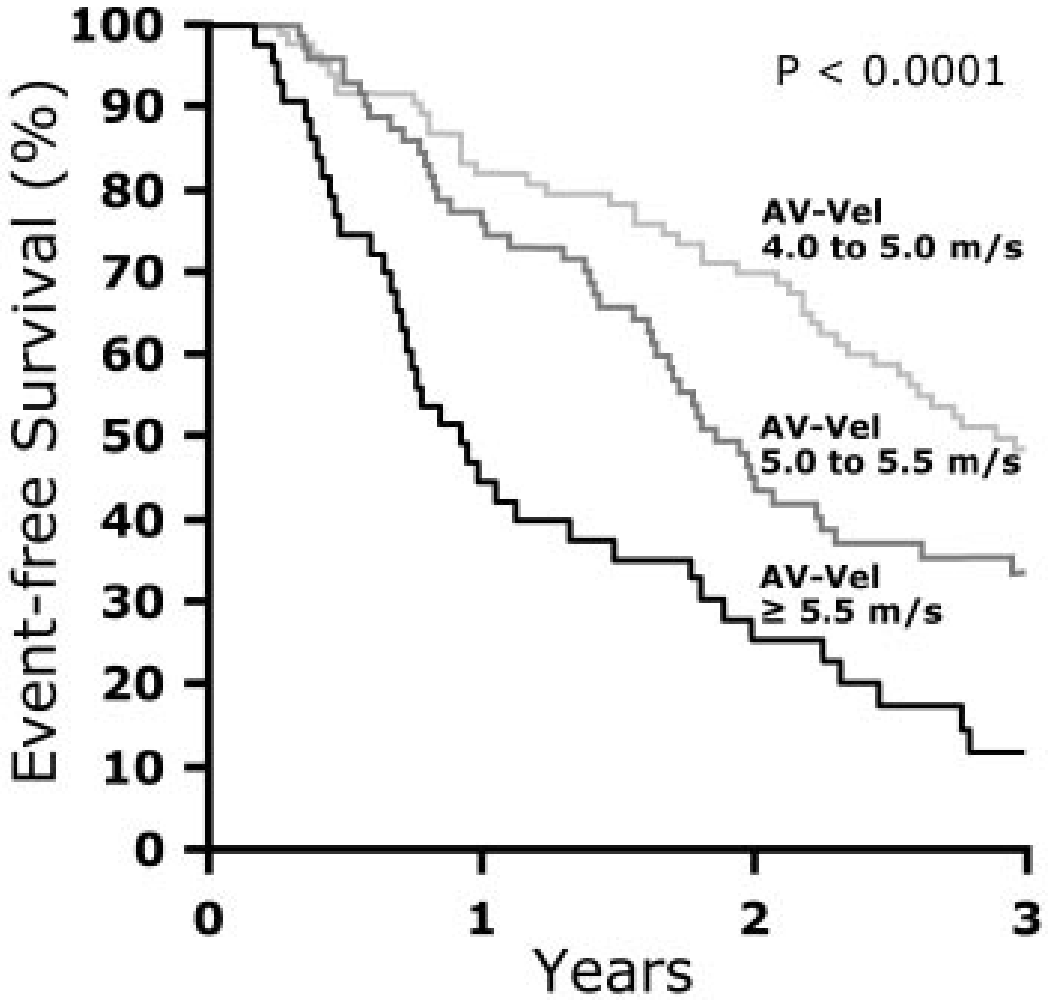
Indication for AVR: Very Severe AS

n=116
44 patients with AV velocity >5.5m/s
96 events: 90 AVR





Rosenheck et al., Circulation, 2010

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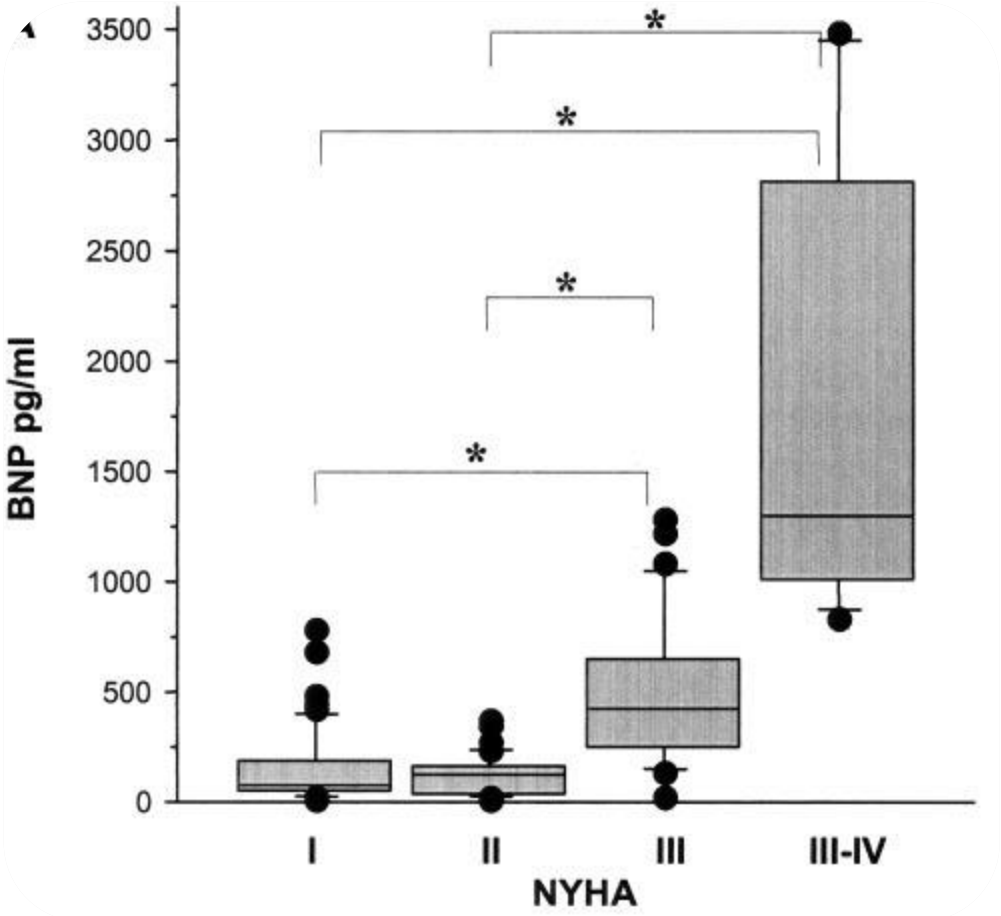
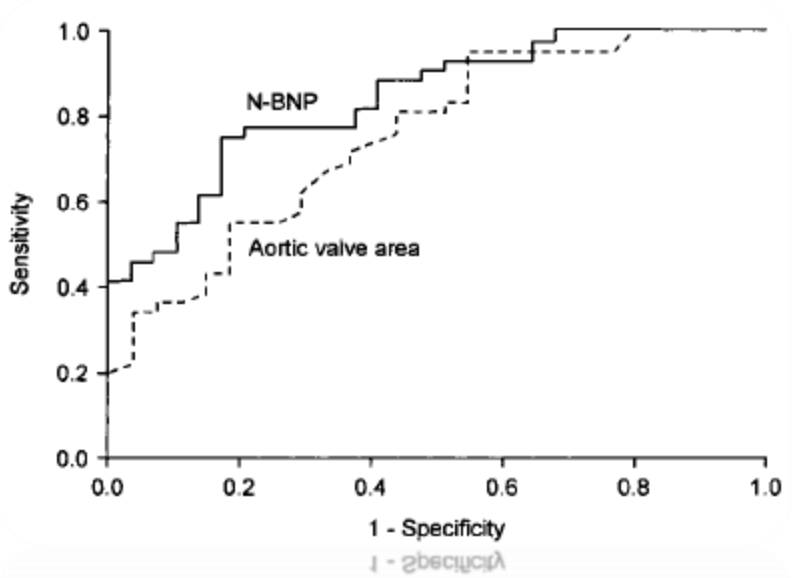
AVR may be considered in asymptomatic patients with severe AS, normal EF and none of the above mentioned exercise test abnormalities, if surgical risk is low, and one or more of the following findings is present: • markedly elevated natriuretic peptide levels confirmed by repeated measurements without other explanations, • increase of mean pressure gradient with exercise by > 20 mmHg, • excessive LV hypertrophy in the absence of hypertension.	IIb	C

BNP level in AS



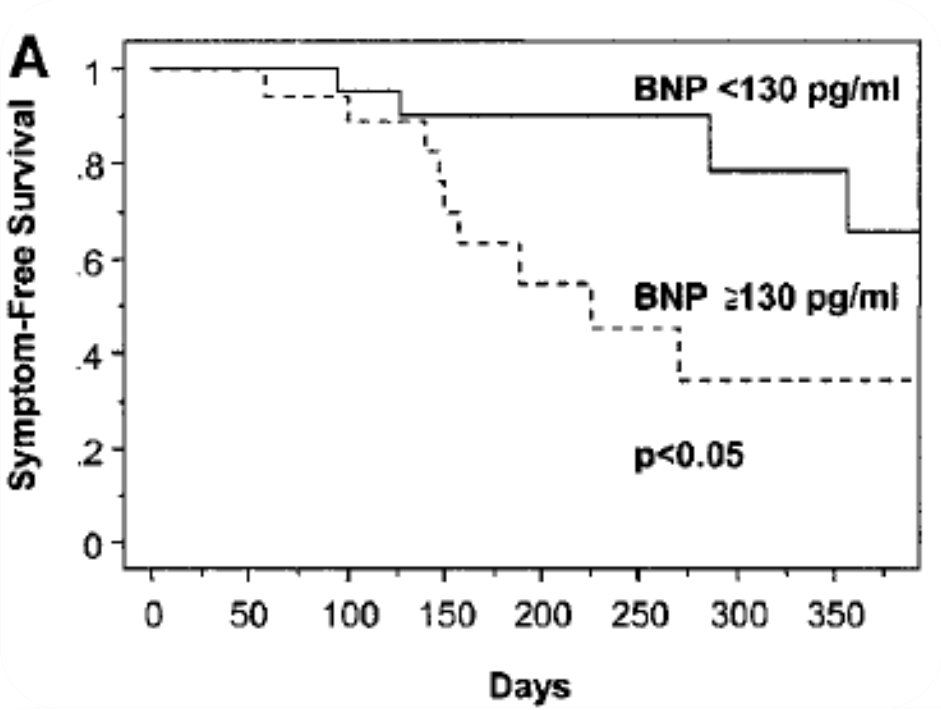
BNP level is well associated with the symptomatic status



Bergler-Klein et al. Circulation 2004

Gerber et al. Circulation 2003

BNP level and Symptoms in AS



- **BNP is more powerful than AS severity parameters to identify symptoms**
- **BNP level may predict the occurrence of symptoms:**

	Baseline			Follow-Up		
	Patients Developing Symptoms (n=14)	Patients Remaining Asymptomatic (n=29)	*P*	Patients Developing Symptoms (n=14)	Patients Remaining Asymptomatic (n=29)	*P*
BNP, pg/mL	188 (56–420)	64 (27–161)	<0.001	486 (83–738)	64 (43–115)	<0.01
NtBNP, pmol/L	131 (50–202)	31 (19–56)	<0.001	136 (37–739)	32 (18–67)	<0.01

Bergler-Klein et al. Circulation 2004

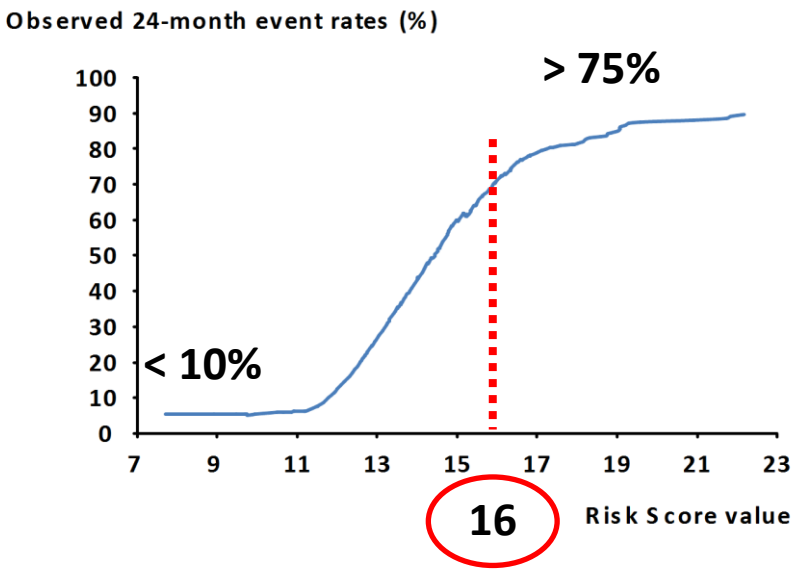
BNP for Risk Stratification in Asymptomatic AS

Risk Score for Predicting Outcome in Patients With Asymptomatic Aortic Stenosis

Jean-Luc Monin, MD, PhD; Patrizio Lancellotti, MD, PhD; Mehran Monchi, MD; Pascal Lim, MD; Emmanuel Weiss, MD; Luc Piérard, MD, PhD; Pascal Guéret, MD

- **107 pts followed in Créteil**
- **Risk score according to independent variables**
- **Validation in Liège (107 pts)**

Score = (Peak velocity x 2) + (nat log BNP x 1.5) + 1.5 (if female)

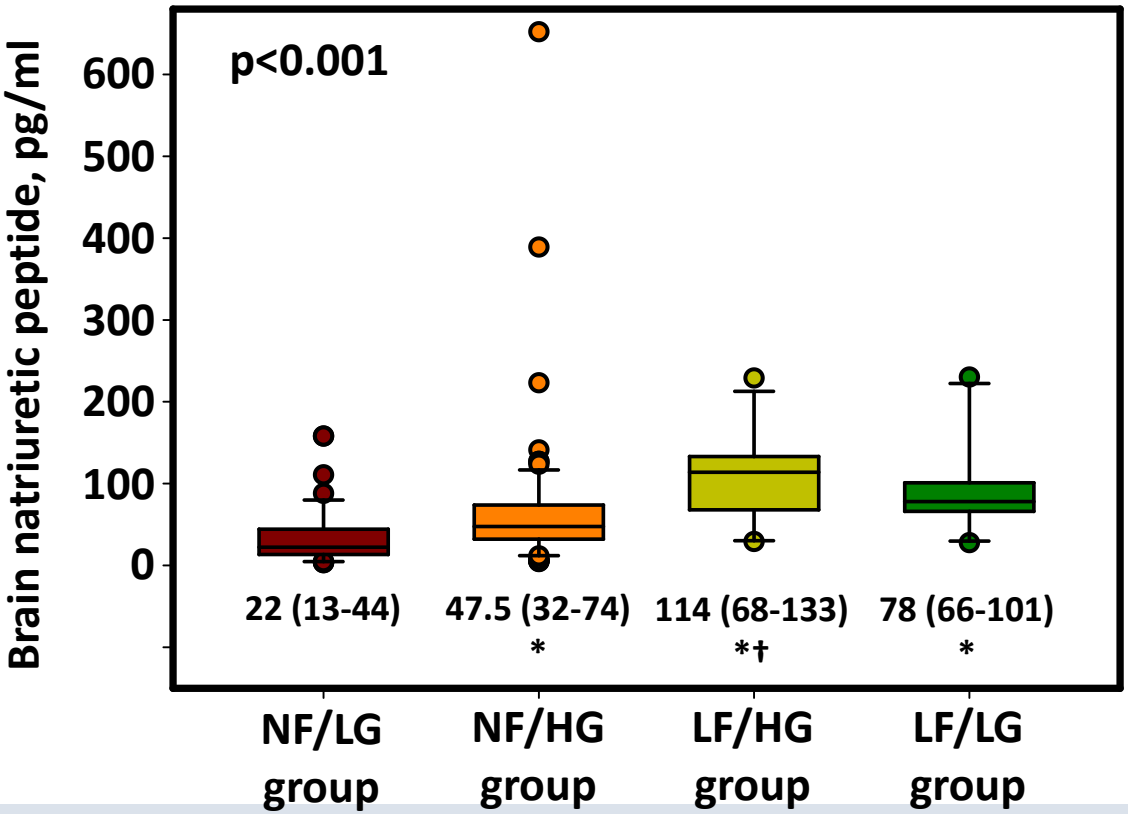


Monin et al. Circulation, 2009

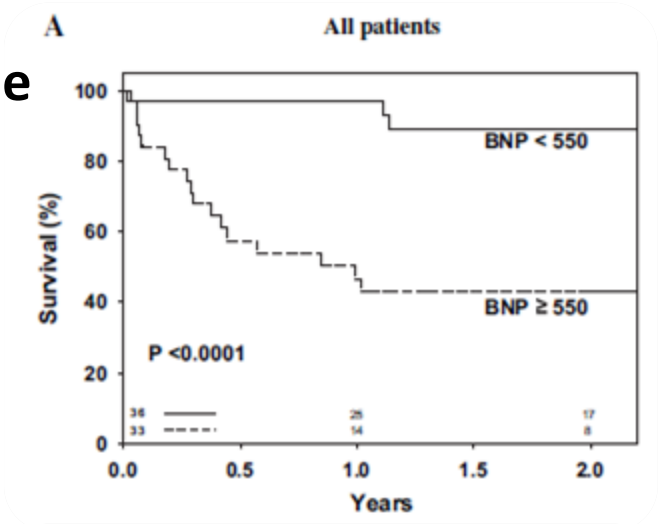
BNP level in LF/LG AS

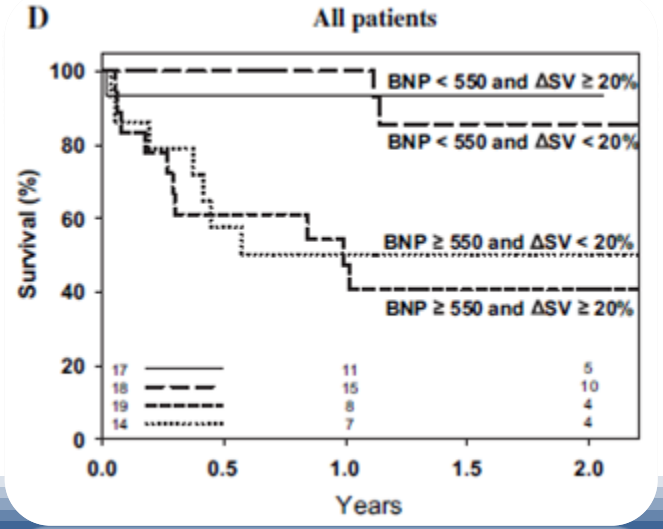
BNP is significantly elevated in LF AS, even in paradoxical LF/LG AS

BNP level >550pg/mL strong predictor of outcome in LF/LG AS



TOPAS study





Lancellotti, Magne et al. JACC, 2012

Bergler-Klein et al. Circulation, 2007

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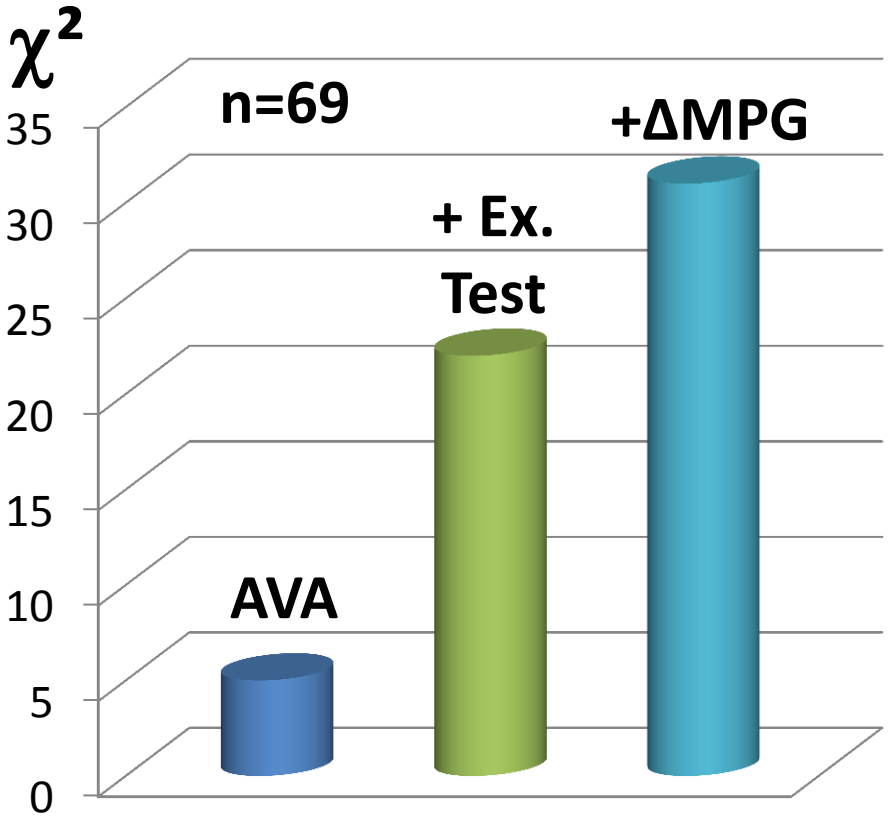
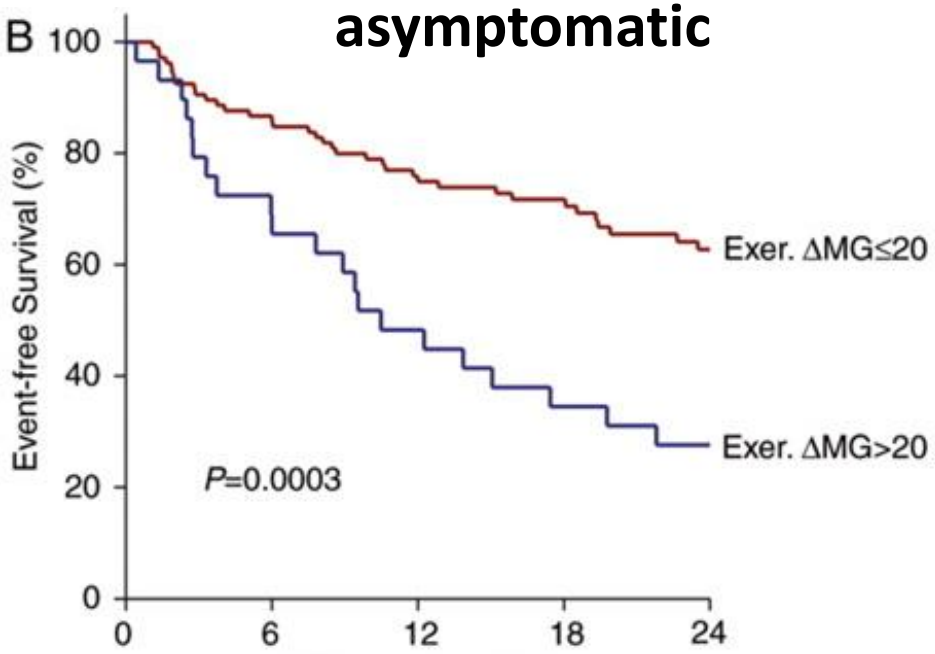
Prognostic Impact of Exercise Echo in AS



38% of abnormal exercise test (78 of pts with event)

n=135 "True" asymptomatic



Ex. MPG +20mmHg: HR=2

Lancellotti et al. Circulation 2005
Maréchaux et al. Eur Heart J, 2009

Contraindications for transcatheteter aortic valve implantation

Absolute contraindications

Absence of a "heart team" and no cardiac surgery on the site.
Appropriateness of TAVI, as an alternative to AVR, not confirmed by a "heart team".

Clinical

- Estimated life expectancy < 1 year.
- Improvement of quality of life by TAVI unlikely because of comorbidities.
- Severe primary associated disease of other valves with major contribution to the patient's symptoms that can be treated only by surgery.

Anatomical

- Inadequate annulus size (< 18 mm, > 29 mm).
- Thrombus in the left ventricle.
- Active endocarditis.
- Elevated risk of coronary ostium obstruction (asymmetric valve calcification, short distance between annulus and coronary ostia, small aortic sinuses).
- Plaques with mobile thrombi in the ascending aorta, or arch.
- For transfemoral/subclavian approach: inadequate vascular access (vessel size, calcification, tortuosity).

Relative contraindications

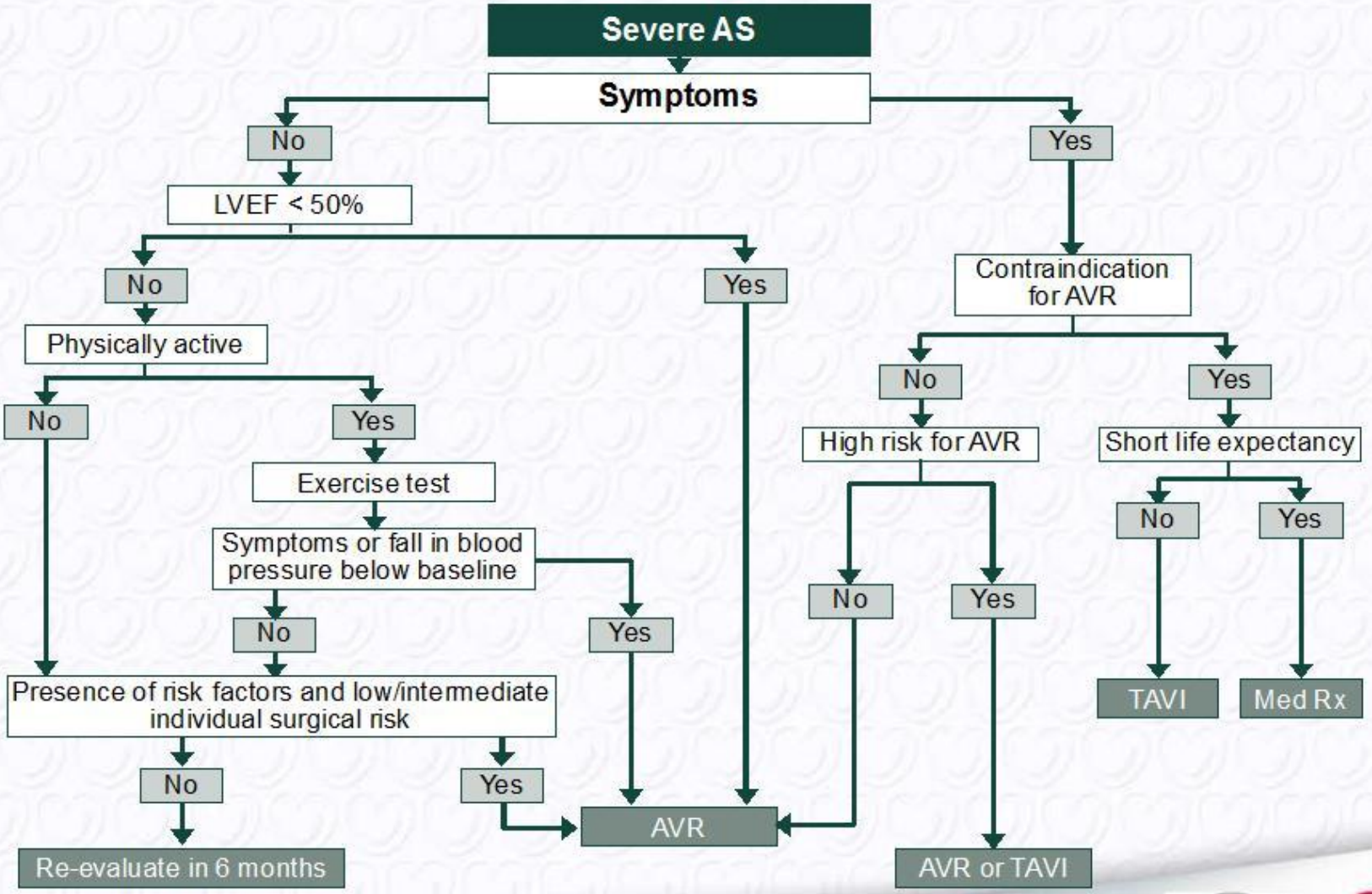
- Bicuspid or non-calcified valves.
- Untreated coronary artery disease requiring revascularization.
- Haemodynamic instability.
- LVEF < 20%.
- For transapical approach: severe pulmonary disease, LV apex not accessible.

European Heart Journal 2012 - doi:10.1093/eurheartj/ehs109 & European Journal of Cardio-Thoracic Surgery 2012 - doi:10.1093/ejcts/ezs455).

Indication for TAVI

	Class	Level
TAVI should only be undertaken with a multidisciplinary "heart team" including cardiologists and cardiac surgeons and other specialists if necessary.	I	C
TAVI should only be performed in hospitals with cardiac surgery on-site.	I	C
TAVI is indicated in patients with severe symptomatic AS who are not suitable for AVR as assessed by a " heart team" and who are likely to gain improvement in their quality of life and to have a life expectancy of more than 1 year after consideration of their comorbidities.	I	B
TAVI should be considered in high risk patients with severe symptomatic AS who may still be suitable for surgery, but in whom TAVI is favoured by a "heart team" based on the individual risk profile and anatomic suitability.	IIa	B

Management of severe aortic stenosis



European Heart Journal 2012 - doi:10.1093/eurheartj/ehs109 &
European Journal of Cardio-Thoracic Surgery 2012 -
doi:10.1093/ejcts/ezs455).

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